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REACTORS AT THE SAVANNAH RIVER PLANT

HEARING

BEFORE THE

SUBCOMMITTEE ON
STRATEGIC FORCES AND NUCLEAR DETERRENCE

OF THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

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REACTORS AT THE SAVANNAH RIVER PLANT

MONDAY, FEBRUARY 29, 1988

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON STRATEGIC FORCES
AND NUCLEAR DETERRENCE,
Washington, DC.

The subcommittee met in open session, pursuant to notice, at 9:35 a.m., in room SR-253, Russell Senate Office Building, Senator J. James Exon (chairman) presiding.

Present: Senators Exon, Glenn, Thurmond, and Quayle.

Staff present: Robert E. Bayer, Robert F. Bott, Sherri Wasserman Goodman, William E. Hoehn, Jr., George K. Johnson, Jr., and Ronald P. Kelly, professional staff members; Mickie Jan Wise, staff assistant.

Also present: Milton D. Beach, assistant to Senator Glenn; Kevin T. Knobloch, assistant to Senator Wirth; and Henry D. Sokolski, assistant to Senator Quayle.

OPENING STATEMENT OF SENATOR J. JAMES EXON, CHAIRMAN

Senator EXON. The subcommittee will please come to order.

This morning the subcommittee meets to review recent developments at the Savannah River Plant. Power levels at the L reactor at Savannah River were recently reduced, while the power levels of two other reactors at Savannah River were increased slightly. In the last several years, our Nation's production reactors have been the focus of much attention. The Armed Services Committee has been particularly concerned about the safety of the Department of Energy defense facilities, and last year approved legislation that would create an independent safety board for these facilities.

I have asked the Department of Energy and Du Pont, the Savannah River contractor, to testify today so that this committee will have all of the facts before it. I am concerned that we may get the story indirectly. I think it is important that we also get the other side of the story directly from those who are responsible, and let's take press accounts in their proper stride.

There will be some questions, I am sure, on recent press accounts of you gentlemen here this morning.

The subcommittee is pleased to have three witnesses, three very important witnesses on this subject join us this morning. We will first hear from Hon. Paul W. Kaspar, Acting Deputy Assistant Secretary for Operations in Defense Programs, Department of Energy. Next we will hear from Mr. Robert Morgan, manager of the Savannah River Plant for the Department of Energy. Finally, we will

hear from Dr. Joseph Spencer, Du Pont's program manager for Nuclear Reactor Technology and Scientific Computations at the Savannah River facility.

Before we hear from Mr. Kaspar and the opening statement that I am sure he has, I would say to you, Mr. Kaspar, that your full statement will be entered into the record as if read. You may make your own choice as to whether you want to capsulize that in whatever form you wish for the committee this morning.

In any event, after that, we will go into questions.

I would like to yield at this time to my distinguished friend and colleague, the ranking member of this committee, Senator Thurmond from South Carolina, for any opening remarks that he might have.

Senator.

Senator THURMOND. Thank you, Mr. Chairman.

I want to congratulate you on holding this hearing this morning. It is a tribute to your strong interest and that of this subcommittee in the continued safe operation of the production reactors of the Department of Energy.

This committee, on the basis of actions taken last year in consideration of the 1988 Defense authorization bill and of S. 1085, came to a full appreciation of the challenges that lie ahead of us in providing for the requirements of our nuclear weapons stockpile and the safe operation of our production complex.

The recently announced closing of the N reactor which this committee anticipated points to the soundness of actions taken by the Congress last year in accelerating the start of a new production reactor. As our witnesses are certainly aware, I have been following very closely the progress the Department of Energy has been making in the process, which I believe is too long, of getting a new production reactor under way.

Mr. Chairman, I join you in welcoming our witnesses here this morning. I have worked closely with Mr. Morgan for many years and look forward to working with Mr. Kaspar who will soon be taking over as plant manager on Mr. Morgan's retirement. I also appreciate very much the presence here today of Dr. Spencer. Mr. Morgan and Dr. Spencer were directly involved in the recent power reduction of the L reactor. While I was briefed on the decision at the time by officials of the Department of Energy, I look forward to their testimony to shed additional light on the events leading up to that decision.

Thank you, Mr. Chairman.

Senator EXON. Thank you very much, Senator Thurmond.

We will start out then with Mr. Kaspar, and then we will follow with Mr. Morgan, and then Dr. Spencer, and then I think it would be appropriate for all of us to ask whatever questions we would like following the testimony of the three witnessess.

STATEMENT OF HON. PAUL W. KASPAR, ACTING DEPUTY ASSISTANT SECRETARY FOR OPERATIONS, DEFENSE PROGRAMS, DEPARTMENT OF ENERGY

Mr. KASPAR. I would like to summarize my remarks, if I may.

We are here to discuss the operating limits that have been placed on the Savannah River reactors.

Senator EXON. Would you hold just a minute, Mr. Kaspar? We seem to have a technical breakdown.

Mr. KASPAR. All right? There we go.

Senator EXON. We have shortcomings and do not always operate at full power around here either.

Mr. KASPAR. There are three operating reactors at Savannah River, P reactor and K reactor are currently on a tritium charge, producing tritium. The L reactor is on a plutonium charge. There were two other reactors historically at the site, R and C. Those are now shut down. Those reactors are 2,400 megawatt thermal heavy water reactors. They operate at low temperature, low pressure. Those design features are significantly different than the design of light water reactors.

If you look at power levels and how you go about setting limits on them, there are several constraints that you have to keep in mind. One is the material limitations of the actual real time design of the reactor. The second is that you have to stay within environmental constraints that may be placed upon it by the State or by EPA. You also have to preclude any significant core damage to the reactor in the event of a hypothetical severe accident. The actual limits that are placed on operations become the most restrictive of those limitations.

If you look historically at how those reactors have their power levels set, the fuel element effluent temperature has been the limiting feature. In 1986 L reactor came on line. It was restarted after some outage and obtaining permits from the State of South Carolina and EPA. In the warm weather months, the feature that limits the power level is the discharge of cooling water to its cooling water lake. So for the L reactor, in warm weather months, environmental constraints become the limiting power level.

Also in 1986, if we run through this chronologically, there was a continuing review of the safety features of the reactors and some new data was developed which raised some uncertainties about the ability of the emergency core cooling system to handle the hypothetical severe accidents. The severe accident, which here is defined as a double-ended pipe rupture, happens where a pipe breaks and is offset, and flow can come out both ends of the pipe, with failure of a valve in a companion emergency core cooling loop.

This loss of coolant accident is consistent with that considered for light water reactor designs, but because of the difference in design features, the low pressure, low temperature, it is thought to be less credible. But for consistency with the light water reactor program, that is what the analysis has been based on. In 1986, then, when this new data became available, reactor power level was reduced 25 percent.

In that same timeframe, Secretary Herrington had asked that the National Academy of Sciences review the safety of the production reactors of the Department of Energy and to report to him promptly any issues which they felt required immediate action.

If I quote from a memo that came in from the National Academy, it said that they were not able to conclude with confidence that significant core damage would be avoided if there was severe

loss of coolant accident while the reactors were operating at the currently reduced power limits.

Based on that input from the National Academy of Sciences, a criterion for operations was established which was conservation and was an attempt to remove a number of uncertainties from the calculations. That criterion was that we would assure no bulk boiling in the reactor, even in the event of a severe loss of coolant accident.

Our plan was to establish power limits which were consistent with the no bulk boiling criterion. It requires that the reactor operate at about 50 percent power. Savannah River has established an aggressive research program to improve our calculational tools to deal with understanding what goes on in the core during a severe accident, enhance our experimental data base, and identify any hardware modifications that would reduce the severity of the severe accident.

So again, based on the NAS report, this no bulk boiling criterion was established and power levels were brought down to approximately 50 percent power.

In June of 1987 Du Pont began the development of a modified control system that would, rather than assume values for environmental parameters like inlet cooling water temperature, base our operations on real time-measured values. Recently, the control systems for P and K reactors were modified with this new, real time measured control system, and as a result of that, on February 5 and February 12, P and K reactors, respectively, were increased by 3 percent power to take advantage of the actual measured inlet cooling water temperatures as opposed to assumed inlet cooling water temperatures, still adhering to this no bulk boiling criterion that had been established after the NAS review.

L reactor had not had its control system modified at that point, and so L reactor was not affected by that change.

Also in that same time period, culminating on February 12, as a part of our continuing assessment of the analysis and the process of establishing power limits based on no bulk boiling, there were two nonconservative assumptions that were identified. These nonconservative assumptions affect only L reactor in that they deal with plutonium loading, not tritium loading. The issues have to do with the potential for non-ideal flow distribution across the core where you may get a little more cooling in one channel and a little less in another. And the other had to do with calculation of heat that was generated in the target assembly itself.

As a result of those nonconservative assumptions and the adjustments that were made for them, the reactor power levels were reduced to 45 percent of full power.

Let me point out that those reductions were taken despite the fact that a fourth emergency core cooling loop has been added to L reactor but allowance for its benefit has not been through the independent peer review process, and so no credit was taken in the calculations for that fourth cooling loop.

The other thing is that there is a margin that has been included in the calculations to account for these kinds of uncertainties. However, we wanted to return those margins to what we had believed was appropriate before these anomalies were identified.

So again, our target was to maintain our conservative approach and maintain the kinds of margins that we think are appropriate, given the uncertainties that may be there.

These changes that came up in February were identified by DuPont. When they were identified, the department, the field office was notified that there were some potential anomalies that had to be dealt with. That process resulted in a formal recommendation, a verbal recommendation on February 12 from DuPont to the site office that the power levels should be reduced. There was unanimous agreement in the meeting that the power levels in fact should be reduced, and after notification of headquarters that those actions were being taken, the process was initiated immediately to modify the procedures for reducing the power level, and I believe that began the next day.

We do have a plan. If we look into the future, we do have a plan to increase the power levels, but only after we have more conclusive analytical tools and experimental data to support operation above the current no bulk boiling criterion. And that capability, analytical and experimental capability, has been through an appropriate peer review and independent review process.

But in summary, it has been our intent and is our intent to maintain conservative restrictions on those reactors and to use both internal and external oversight of the calculational process.

We are looking for a commitment at all levels of management with the contractor, the field and in headquarters on our commitment to safety. Again, the no bulk boiling criterion, while it is conservative, is going to remain as our criterion until the contractor is satisfied that his analytical capabilities justify going farther, that it has been through both the line and oversight functions within the field office, and the headquarters line and oversight functions. Additionally, this past week, Secretary Herrington announced the formation of an independent advisory committee reporting to him on the safety of departmental facilities, and certainly the Savannah reactors must be an integral part of that review process.

That concludes my remarks.

[The prepared statement of Mr. Kaspar follows:]

PREPARED STATEMENT OF WILLIAM KASPAR, ACTING DEPUTY ASSISTANT SECRETARY FOR OPERATIONS, U.S. DEPARTMENT OF ENERGY

Mr. Chairman and members of the committee; I am William Kaspar, Acting Deputy Assistant Secretary for Operations, in the Office of Defense Programs of the Department of Energy (DOE). It is my pleasure to provide testimony regarding the operating limits of the Savannah River Plant (SRP) reactors.

There are three currently operating Savannah River production reactors—designated P, K, and L—located at the Savannah River Plant near Aiken, South Carolina. The K and P Reactors are currently used to produce tritium, while the L Reactor is currently used to produce plutonium-239. A fourth reactor, C Reactor, was placed in cold-standby in 1986, and a fifth reactor, R Reactor, was shutdown in 1964. All of the Savannah River reactors are low-pressure, low-temperature, heavy-water cooled and moderated reactors of generally similar design with an average achieved full power level of approximately 2,400 MWt. The use of heavy water, low operating pressures and temperatures at the Savannah River Plant reactors and the resulting low stored energy available for sudden release in an accident, represent significant design differences from commercial nuclear reactors.

This full power level is not a fixed number but rather is continuously adjusted as cooling water temperature and other variables change. As in commercial reactors, a number of limits on reactor parameters such as reactor outlet temperature, heat

generation rates, etc. are established to stay within the limitations of the reactor materials and design as well as to preclude major core damage for a number of hypothetical, very low probability accidents including a pump shaft break, a pipe break in the worst possible location, and spurious removal of a number of control rods. The most restrictive of these limits ultimately determines the highest power level which ensures an acceptable margin of safety.

The limiting parameter has historically been the fuel element outlet temperature based on the hypothetical accident of a spurious withdrawal of a group of control rods. Reactor power levels were controlled by the limit set on this parameter.

Other effects also control power level. For example, the L Reactor operating power level is controlled during warm weather by an environmental restriction on the temperature of the water in the cooling lake. In the winter, the power level is higher because the low ambient temperature of the lake is not restrictive and the power level is limited by the technical parameters such as the spurious removal of a group of control rods. In the summer, the reverse is true when the power is limited first by the high lake temperature during the warm spring and summer months. The lake temperature limitations are specified by the operating permit issued by the State of South Carolina. This limitation has a significant impact on operating power levels in warm weather months.

In late November 1986, as part of a continuing program to evaluate the safety of the production reactors, Savannah River obtained new experimental evidence which indicated uncertainties in the analytical and experimental database associated with the determination of the ability of the plant and its emergency cooling system to accommodate the very low probability, hypothetical accident of a pipe break in the worst possible location, commonly referred to as a loss of coolant accident (LOCA). Initiation of this hypothetical, instantaneous, doubled-ended pipe break used as a design basis LOCA has a probability, based on current analyses as part of the ongoing PRA, of less than one in a million per year of reactor operation. This type of accident, while consistent with safety analyses made for commercial power reactors, is far less probable for a low-temperature, low-pressure reactor. However, it is being used for the SRP reactors for the sake of a worst-case scenario. After the management at Savannah River applied appropriate conservatism to the reactor parameter limit calculations for the LOCA accident to account for uncertainties, it became a dominant term in setting operating power levels for the Savannah River reactors and the operating power levels were effectively reduced by approximately 25 percent.

In March 1987, the National Academy of Sciences (NAS) panel informed DOE that, as a part of their assessment of DOE's major reactors, they were ". . . not able to conclude with confidence that significant core damage would be avoided if there were a severe loss of coolant accident while the reactors are operating at the currently reduced power limits." The NAS did not indicate that the Emergency Core Cooling System was inadequate to prevent core melting, but rather that they could not conclude, with confidence, that no melting would occur in the event of a very low probability event.

Based on the NAS review, DOE directed that the further conservation be included in the method for determining reactor parameter limits for this accident, thus resulting in three reactors at SRP undergoing furthur reductions in power levels to assure no bulk boiling during a LOCA until the concerns of the NAS are addressed. This restriction of no bulk boiling coupled with appropriate analytical margins leads to power levels of about 50 percent of full power operation.

In response to the reductions in the operating power levels, Savannah River established an aggressive research program to: (1) improve their calculational tools for LOCA analysis; (2) enhance the experimental database; and (3) identify reactor/fuel modifications to reduce the severity of an accident.

With operations limited by no bulk boiling constraints, power levels and other control points are set based on a number of inputs. One of the parameters used in determining reactor limits for a LOCA is the inlet cooling water temperature. Originally this parameter was projected over an extended period based on the maximum inlet temperature from historical data and verified daily. In June 1987, Savannah River started an effort to design on-line control computer software and hardware changes to automate the process involving the inlet temperature to reflect more properly the true inlet temperature on a continuous basis while maintaining a conservative no bulk boiling constraint. This modification was implemented in P and K Reactors on February 5 and 12, 1988, respectively. A small increase in power of about 3 percent resulted from this more accurate method of incorporating the actual inlet temperature of the cooling water in calculating the power limits. The L

Reactor control system has not yet been modified with this change and these were not affected.

As a part of ongoing reviews of the implementation of the methodology for the L Reactor LOCA limit calculation, some small additional nonconservatism were identified by Savannah River in conjunction with an Office of Environment, Safety and Health review team and the L Reactor limits were modified, reducing the operating power level to approximately 45 percent on February 12, 1988. Due to differences in charge types (i.e., tritium vs. plutonium), the change had no impact on P and K Reactors.

These recent changes do not represent a fundamental change from our conservative operating limits (no bulk boiling under severe accident conditions or more restrictive environmental limits, as appropriate). Rather, they represent refinement or adjustments in power levels aimed at efficient and conservative operation. These changes were unanimously agreed upon by senior DuPont and DOE field management. DOE/Headquarters was promptly notified of the adjustments.

A comprehensive action plan has been prepared by Savannah River, aimed at recovering full nominal power levels by the end of 1990. The plan, which is currently under revision, is a multiphased combination of calculational, experimental, and hardware improvements. These improvements will establish the conclusive analytical tools found lacking by the NAS. Armed with these tools, we hope higher power levels will be justified while maintaining an acceptable level of conservation. Detailed reviews will be conducted by the Department prior to modification of our current methodology in establishing power limits. The Department intends to monitor continually the operating power levels at the Savannah River reactors to ensure that the reactors are operating in a safe manner.

This concludes my prepared remarks and I would be pleased to respond to questions.

Senator EXON. Thank you very much, Mr. Kaspar.

We have been joined by a very valued member of our subcommittee, Senator Glenn.

Do you have an opening statement, Senator Glenn?

Senator GLENN. Well, I did, Mr. Chairman. Maybe it would be appropriate to bring it in right now or would you rather wait until after they finish?

Senator EXON. I recognized you if you have an opening statement.

Senator GLENN. All right, fine, I do.

I congratulate you, Mr. Chairman, on putting together this hearing on such short notice. It is still too early to draw conclusions from this latest incident at the Savannah River L reactor, but DOE's record on environmental, health and safety issues at its defense production complex is very much a known quantity. It is ironic that as a result of nearly four decades of production of nuclear materials for weapons to deter war with the Soviets, which I very, very strongly support, large numbers of Americans now find themselves at increasing risk of being poisoned or irradiated in peacetime.

I am convinced that as long as DOE remains solely responsible both for producing nuclear weapon material and ensuring health and safety at its production facilities, the conflict of interest is too great. I state this conclusion very reluctantly, but with conviction.

Close to 3 years ago I conducted an investigation into the management and operation of the Feed Materials Production Center at Fernald, Ohio. What I discovered was shocking. I went out there, I might add, prepared fully to defend the Government's position on this. I thought maybe too much was being made about problems there. And I came away convinced quite the opposite. Because of this, I expanded the research we were doing into other areas around the country and other DOE operations.

What I discovered at Fernald was especially shocking because during the 35 years of the plant's operation, more than 300,000 pounds of radioactive uranium had been released into the surrounding air and water, contaminating offsite wells, seriously jeopardizing the health of plant workers and nearby residents. Despite this record of environmental neglect, DOE consistently evaluated the contractor's performance as excellent and awarded substantial bonus fees to the contractor based on production.

Subsequent studies and hearings revealed that Fernald was not an isolated case. To the contrary, the General Accounting Office surveyed nine DOE facilities and reported in September 1986 that, and I quote, "at eight of the nine facilities we reviewed ground water is contaminated as a result of DOE activities. At most of the facilities the ground water is contaminated with both hazardous waste and radioactive material. Although not as widespread, our review also showed that soil outside restricted burial grounds or disposal facilities was also contaminated with radioactive and/or hazardous waste at six of the facilities we reviewed."

I have been to the wells offsite on some farms adjacent to Fernald which have been closed due to radioactive contamination.

DOE's systemic disregard for safety and the environment at its defense production complex is now well documented. On March 12 of last year, GAO's Assistant Comptroller General testified in the Governmental Affairs Committee that, and I quote, "Conflicts can and do occur between production goals and safety functions." He concluded that, and I quote again, "Outside independent oversight is critical if DOE wants to provide a high degree of public assurance that its operations are safe and conducted in an environmentally acceptable manner."

Similarly, GAO Associate Director Keith Fultz testified at a second hearing last year that "DOE has not given sufficient emphasis to environmental protection."

Now, this would seem to be quite an understatement when one considers the illustrations offered by Mr. Fultz: At the Savannah River site in South Carolina, radioactive contamination in one stream was found by GAO to be 750 times greater than drinking water standards. At DOE sites in Colorado and Tennessee, ground water contamination was measured as much as 1000 times above drinking water standards. At the Hanford site in Washington, GAO found that 25 million gallons of contaminated waste had been placed in an unlined disposal site without proper ground water monitoring.

Mr. Chairman, let me assure you that GAO has done its homework when it comes to environmental and safety issues at DOE nuclear facilities. I have over 21 reports here that address this subject, many of which I commissioned over the last 3 years as I began to understand the scope and magnitude of the problem.

In addition to these reports and hearings, the National Research Council of the National Academy of Sciences has reviewed safety issues at the defense production reactors, reactors at the Hanford and Savannah River sites producing plutonium and tritium for nuclear weapons, at the request of Energy Secretary Herrington. The Academy's results released last fall were as disturbing as the GAO findings. The National Academy of Sciences found that, and I

quote, "The Department's approach to management falls short of reasonable expectation in attempting to cope with the mix of production and safety responsibilities."

To remedy this problem, NAS recommended the establishment of, and I quote, "an independent safety oversight committee."

There is little indication that conditions at the defense production reactors have improved. Early this month, DOE scrapped plans to restart the Hanford N reactor which has been shut down for more than a year due to safety concerns. Less than a week later, the Washington Post reported that the L reactor at Savannah River has continued to operate at power levels beyond the proven capacity of its emergency core cooling system.

Even after scientists uncovered the problem, DOE reportedly resisted a reduction in power so as not to, and I quote, "raise the spectre of continuing problems at Savannah River."

Mr. Chairman, both this committee and the Governmental Affairs Committee have reported out legislation that would establish an independent oversight board to monitor environmental safety and health issues at DOE defense nuclear facilities. Let me just stress that this approach is not antinuclear. I am for whatever nuclear materials production we need in this country. If all the arms control negotiations fall through, we need to have this production and we need it badly. And so I support it.

But I also believe we can be pro safety at the same time. We have been told by experts that if we applied the NRC safety standards to the DOE facilities, it is their belief that there is not one single DOE facility that would pass the NRC inspection applied to the commercial nuclear electrical generating plants in this country.

Mr. Chairman, I know you share my view that DOE must fulfill its defense mission to produce nuclear weapons material and I support that, but it must not do so at the expense of worker and public health and safety.

Thank you every much.

Senator EXON. Thank you, Senator Glenn.

Mr. Morgan.

STATEMENT OF ROBERT L. MORGAN, MANAGER, SAVANNAH RIVER PLANT

Mr. MORGAN. I would just like to briefly say, Mr. Chairman, that the Secretary of Energy is committed to a safe environment and sound program, and that I have testified before that I have not and I will not sacrifice safety for production.

The recent meeting that was referenced on the 12th of February, we had a meeting with Du Pont and took the most conservative approach to that to make sure that the reactors are absolutely safe to operate.

That is all I would like to say at this time, sir.

Senator EXON. Dr. Spencer, we are pleased to recognize you at this time.

STATEMENT OF DR. JOSEPH D. SPENCER, PROGRAM MANAGER, NUCLEAR REACTOR TECHNOLOGY, DU PONT, SAVANNAH RIVER LABORATORY

Dr. SPENCER. Thank you very much.

I would like to take a few minutes to discuss the situation Mr. Kaspar and Mr. Morgan have elaborated on with regard to recent events, and also relating back to the National Academy of Sciences report. I would like to particularly discuss the relationship between the contractor, that is, Du Pont, and the Department of Energy, and what I would like to do——

Senator THURMOND. Dr. Spencer, excuse me. I am not sure the people in the rear can hear you.

Would you pull your microphone a little bit closer?

Dr. SPENCER. Okay, fine. Thank you.

What I would like to discuss, particularly, is the relationship between the contractor and the Department of Energy, and I will use this recent chain of events as an example of how we do interact.

As Mr. Kaspar mentioned, following the review we had with the National Academy of Sciences, which started in 1986, we instituted a very aggressive program to address the concerns that were being raised by members of the National Academy of Sciences. In fact, we produced a report last summer that outlined our program, and we have moved forward aggressively with that, and that program is consistent with the recommendations that came out in the final report that was issued by the National Academy at the end of October of 1987.

In reference to the most recent power reduction in L reactor, let me take you back a little bit in time, and as part of this program that I mentioned, we did anticipate that even though we had reduced power 50 percent as we went through developing the technology base, there would be times when there would be possibly slight decreases in reactor powers and modifications in the methodology that was being used.

Early in February my technical staff in Savannah River Laboratory came to me and said that they had found an error in the calculations that were used to derive the limits of operation, a relatively small error, and also, there was another point that really was a judgmental one in dealing with the flow variation, and they felt that there would be need to change the limits slightly in L reactor.

So I asked them a number of questions and then asked them to review this in detail with the technical staff in the Savannah River Plant, the people that operate the reactors.

They did that, then came back to me on February 5 and said that they felt that the effects were in fact real and needed to be compensated for. We notified the Department of Energy staff at that time. Then that Saturday we had a subsequent meeting to work out the details of how much the impact would be.

That following Monday, several members of the Du Pont management met with Mr. Morgan and briefly told him that we anticipated there would be a reduction in power recommended later that week. We were still working between our technical staffs to develop the specific amount of the recommendation.

That Friday, after a number of discussions, between the Laboratory technical community and the Plant technical community, we came to an agreement on what the recommendation would be. There never was any question but that the effects were real. The question was in relation to the consideration that we already had a large margin or operating pad, and did we need to add an additional pad associated with this particular effect.

We met with Mr. Morgan and his staff, I believe it was about 5 o'clock on Friday the 12th, four members of the Du Pont management, including me. I went through the chain of circumstances, what our recommendations were, what the technical issues were. Mr. Morgan and his staff asked a number of questions for clarification. It was a very calm meeting, discussing the technical issues.

At the conclusion of the meeting, Mr. Morgan, in order to get closure for the meeting, said does everyone in this meeting agree with the recommendation to make this reduction in reactor power? He looked around the room. Everybody said yes. They concurred in that agreement.

Then he asked the same question in a different way. He said, if we do not make that change, does anybody disagree with this, and I said yes, I would disagree if we do not make the change in power, and just took my badge and kind of set it down on the table, somewhat in jest. And everybody said fine, and got up and walked out.

At that point, the decision had already been made. There really was no question about the matter.

The reports of that meeting were totally in error, totally inaccurate. The Department of Energy never resisted the change. Mr. Morgan's production staff, his safety staff all concurred in the recommendation, and it was, as I said, a very calm, quiet meeting.

So we then left the meeting and went forward to make the adjustments in reactor power.

That was a quick discussion of the kinds of relationship we have. I think of the situation as one where there are really three clear players in the game. There is the Savannah River Laboratory, which has independent responsibility for the generation of limits and oversight of what happens on the plant site; the Savannah River Plant, the folks that operate the reactors, they have clearly their safety responsibility and operational responsibility; and then the Department of Energy.

And so all three of those have the power to reduce reactor power. In fact, if we are going to increase reactor power, it takes more than all three of those. It takes additional review processes which have been set up at the Department of Energy.

So this process worked well in this particular circumstance. It was a relatively insignificant adjustment to reactor power, but the process worked as it has worked in a number of times in the past.

And that is the technical and managerial review of the decision, and then moving forward with making the decision.

Thank you.

Senator EXON. Thank you, Dr. Spencer.

Gentlemen, we are going to a 5-minute rule per round to get things started here so everybody can have a chance to ask questions.

I have so many questions in this area and, I think, so does the general public and certainly the U.S. Senate and the House of Representatives. My view is that the Department of Energy has not been as forthcoming as it should have been in the past with regard to safety concerns, and number two, it has been slow to assess these problems.

Now, I am under the impression that maybe we have turned the corner on this, and while there were some critical errors in the past, we have maybe turned a new leaf. I do not know what date to put on that, but I recognize that when we get into nuclear power and the dangers connected with it, especially after the Chernobyl disaster, we tend to bring public focus and attention to this.

My major concern here, and I think the concern of our Strategic Nuclear Deterrence Subcommittee, is to make certain that under reasonable and proper safeguards we have the necessary plutonium and tritium necessary to meet our national security needs. That does not mean that those are more important than safety or that safety is more important, in my view, than the national security needs. Nothing is without risk I suspect.

I would just like to ask a general question as to whether or not each of you would agree that the Department of Energy has not been as forthcoming as it should have been in the past. If that is true, has a new leaf been turned, and what do you think of the new budget proposals in this area incorporated in the President's budget, and do you believe that it is necessary in view of the shutdown of the Hanford facility and the cutback of some production of Savannah River, that we spend the appropriated recommendation by the President for the Fernald plant in Ohio?

Mr. KASPAR. You had several questions.

Senator EXON. Lots of questions.

Mr. KASPAR. First of all, I think everyone would have to agree that historically some of the practices of the Department would not have been acceptable by today's standards. It may not have been acceptable by yesterday's standards, but certainly there is a commitment by the management of the Department of Energy to get these problems fixed.

We are now regulated environmentally for most of our effluents. Clean water, clean air, NESHAPS, all those laws apply to the Department of Energy facilities. The safety of reactors is one where we have called in the National Academy of Sciences to give us an independent assessment and make sure that we are on the right track.

So I think we would have to say that yes, there has been a new leaf turned. Secretary Herrington is committed to operating facilities in a safe manner, and if they are not safe, he will not permit them to operate.

Senator EXON. The statements you just made with regard to the commitment of the Secretary, does that also go to the matter of clean-up of what appears to be a great deal of contamination throughout this whole problem? Does that go to that as well as making sure that we are safer in the future?

Mr. KASPAR. Those are not necessarily separable issues, but certainly we have to make sure that our work force has a safe place to work, that we are dealing with our health physics problems, that

we are dealing with current day discharges from our plants and making sure we are not making things worse, and then third, characterizing the amount of contamination that has resulted from past practices and getting plans in place to fix them and get those plans funded and get on with it.

Senator EXON. Thank you.

I would just like to ask Mr. Morgan or Dr. Spencer, do you have anything to add to the response to my series of questions by Mr. Kaspar at this time?

Mr. MORGAN. I would just like to say that there is a commitment as far as the field is concerned in the environmental area in cleaning it up, as is the safe operation, and we are currently cleaning up some of the past practices; where we have trichlorethylene in the ground water, we are currently cleaning that up now. We are committed to it, and we are going to make sure that there is no offsite contamination, and we are cleaning up what we have done, which was considered to be acceptable some 20 years ago.

Senator EXON. Thank you.

Dr. Spencer.

Dr. SPENCER. I would just briefly comment. I think there is no question from Du Pont, in the contractor's perspective, there has been a major commitment of our resources, our best talent, to dealing with the environmental issues. If you look at the budget and what is allocated to environmental activities, clean-up, improvement of facilities has become a very substantial impact in our budget on the site. Our performance in terms of our relationship with EPA and South Carolina DHEC has been outstanding in the past few years, and we have gone through a transition, as you said, in the past few years from basically internal regulation to dealing with the State regulatory agencies. That transition is really fully in place now and is working well.

Senator EXON. I want to ask this question of you, Mr. Morgan, and you, Dr. Spencer, although you preempted the question somewhat with your opening statements. You made indirect reference to it, Mr. Morgan, and you made direct reference to it, Dr. Spencer, and I ask this question because I would like to lay some of these things to rest as best we can.

A recent newspaper story that you referred to specifically, Dr. Spencer, said that during that recent meeting there was a "stormy confrontation"—that is part of the story—and that the issue erupted into "an acrimonious meeting."

I take it from your statements that you are saying that that is simply not accurate, and if it is true that that is not accurate, certainly the information that made up the body of that story had to come from someone at that meeting.

How many people were at the meeting, and can you imagine why someone would deliberately distort the meeting if it was as distorted as it seems to me?

We will start with you, Mr. Morgan.

Mr. MORGAN. First, I would like to say that it was not a confrontational, it was not acrimonious, it was a very professional, collaborative meeting with the people participating. I do not know whether any person in that room——

Senator EXON. How many people were in the room?

Mr. MORGAN. There were 12 people, as I recall. Mr. Spencer and I have met with management within the Department. The Department is satisfied with what went on at that meeting. I believe that most of the people in the meeting have been interviewed by someone from the Under Secretary's office to get their view of the meeting. I do not know the results of that, but I know what happened in the meeting, and I believe that it is a total distortion.

I do not know if it was someone in that room that relayed this story or whether it was by someone else before it got to the press. I have no idea, and I do not know why someone would want to do that other than to attack me personally.

Senator EXON. What do you have to add to that?

Dr. SPENCER. I do not believe I could add much. I think the characterization of what happened at that meeting is not accurate, it is absolutely untrue, and that was not the situation. As I said earlier, it was a very routine technical interchange of information and making a decision. The whole meeting maybe lasted half an hour. It was kind of a nonevent in terms of emotion, if you want to say, relative to the meetings.

Senator EXON. And not one fistfight broke out during the whole half hour?

Dr. SPENCER. Not at all.

Senator EXON. Thank you. My time is up.

Senator Thurmond.

Senator THURMOND. Dr. Spencer, you are speaking about the article which appeared in the Washington Post of February 22, 1988?

Dr. SPENCER. Yes, sir.

Senator THURMOND. As I understand what you are saying then, this article is a distortion of what actually occurred, and the truth is not contained in this article, is that correct?

Dr. SPENCER. That is correct.

Senator THURMOND. Mr. Morgan, would you tell the committee your side of the decision process described by Dr. Spencer?

Mr. MORGAN. I beg your pardon?

Senator THURMOND. Do you agree with what Dr. Spencer said?

Mr. MORGAN. Absolutely.

Senator THURMOND. Dr. Spencer, I have been briefed that minor power adjustments were also made to the other two reactors at Savannah River.

Would you tell the committee the nature of, and the rationale for the adjustments?

Dr. SPENCER. Yes, sir. In the other two reactors we implemented more detailed monitoring of the temperatures in the system, and when we did that, we were able to take advantage of those detailed, in-place measurements. Prior to that we had been assuming average values that were conservative. When we were able to take into account this improved monitoring, we were able to increase reactor power by the order of about 2 to 3 percent. Thus, when we had this decrease in L reactor, we were able to increase the power on the other two reactors almost the same amount.

Senator THURMOND. Mr. Morgan, do you have any comments on that?

Mr. MORGAN. Senator Thurmond, I would just like to say that we have not modified—there has been some misunderstanding about

the 50 percent power. We have been operating these reactors at different power levels but living within the limit of systems that we set for no bulk boiling, so that when the inlet temperature increases, we have to reduce the power. If the inlet temperature decreases we can increase the power. But we are still living within the limits.

Now, these other adjustments that we made on the 12th were a refinement in the calculations, and we automatically took care of it. We still are operating below the no bulk boiling temperature limits.

Senator THURMOND. Mr. Morgan, does the Department of Energy have a continuing commitment to the National Academy of Sciences to keep them informed of any changes of status on the production of these reactors?

Mr. MORGAN. Senator Thurmond, we did meet with the National Academy of Sciences last Monday at 1 o'clock to discuss the issues that were raised in the article in the Washington Post, and we will continue to keep them informed, sir.

So the assumption is that one of the systems with that emergency cooling system loop in it would break, so that takes one system out of operation. The second system, we assume a second failure, which says a valve does not open on a second emergency cooling system, so that our calculations are based on only one cooling system, emergency cooling system, operating, in this very unlikely event.

This is considered to be 10 to the minus 6 events per year, so it would be one in a million years. We do not believe that is a credible accident, but we have to analyze and take care of it.

In addition, on the L reactor, to alleviate this we have added a fourth emergency cooling system. The flow rates that we will get from that fourth system will mean that we have two cooling systems operating in that reactor. We have not taken advantage of that yet because we have not done all the calculations and gotten the peer review of that.

But at all times we have been—even with these adjustments, we have about an 18 percent pad between where we are operating and where we calculate no bulk boiling. But because of the uncertainties, we have continued to adjust the power down so we still have the same operating pad.

And so therefore we were not operating the day before at a power level that we would consider as unsafe.

Senator THURMOND. Dr. Spencer, do you agree with what he said?

Dr. SPENCER. Yes, sir.

Senator THURMOND. Thank you.

My time is up, Mr. Chairman.

Senator EXON. Thank you, Senator Thurmond.

Senator Glenn.

Senator GLENN. Thank you, Mr. Chairman.

I am a little bit mystified here. Why do you think people would go out of that meeting and deliberately misrepresent what happened in the meeting?

Mr. MORGAN. I do not know that anyone in the meeting was doing the misrepresentation, Senator Glenn. I do not know who.

Senator GLENN. You are all downplaying this as though nothing serious happened at that meeting. Yet the quotes are in the paper and the reporter that wrote that report as I understand it says there were multiple sources saying the same thing about that meeting; that it was acrimonious, that a badge was thrown down and that Dr. Spencer "dared Morgan to pick it up."

There are a whole bunch of quotes here that that reporter says are accurate and were confirmed by multiple sources.

Mr. MORGAN. I would like for you or your staff to interview all the people that were in that meeting and find out, because that is just absolutely not true, Senator. In fact, it was a very light point.

I think there was some comment about job security and there was some laughter at that point, and it was not acrimonious. And I do not know who would say that and I do not know why.

Senator GLENN. Dr. Spencer, you testified just a moment ago here that you jokingly put your badge on the table. Last week I believe a member of my staff spoke to you and during that conversation you described the meeting, but you indicated the badge on the table incident never even occurred.

Has your recollection been refreshed by talking to some other people since that time?

Dr. SPENCER. I am sure I told your counsel that fact. I told him—I related, and in fact I have talked to dozens of reporters and other people about this incident, and told them every time about the discussion about the badge aspect right at the end of the meeting, which was somewhat in jest, where I just set it on the table.

The decision had already been made. So I am confused by your staffer's comments, because I talked to him as well as a number of other people and related all those events.

Senator GLENN. Dr. Morgan, you say you have a commitment to clean up and it is under way. What are you doing specifically?

Mr. MORGAN. The M area basin, which is a fuel area where we used to let the effluent go into a holding pond, we no longer do that. We have built an effluent treatment facility.

We treat all of the releases from the fuel manufacturing area. We now have agreement with the South Carolina Department of Health and Environment on a closure plan for that pond. So we are now implementing that.

In the meantime, we are using an air stripper. We actually have wells down into the aquifer. We pull the water from the wells, run it through an air stripper that takes out the trichlorethylene, and then we discharge that water to the environment. And this is all under permit with the State and in full agreement.

We have run some other tests on taking some of this out of the unsaturated zone, where we actually pull a vacuum on a well at a depth and bring air through the ground to also drive that trichlorethylene off. That was done on a 3-week permit experimental with the State, and we are going back for a full permit on that.

So we constantly have people on the site. All of our discharge points are reviewed and tested by South Carolina and EPA. So we are in compliance now on discharges, except for the F&H area, where we have a commitment and are building a treatment facility for that area.

It is under a discharge permit right now with the State.

Senator GLENN. Has the material from those ponds gotten down in the aquifer?

Mr. MORGAN. We have two levels there. We have the Tuscaloosa aquifer, which is deep. I believe it is something like 200 feet. And then you have a ground water level above that.

Most of the contamination of trichlorethylene is in the ground water above this aquifer. We have only had very, very minor indications where there has been a well casing going down into the Tuscaloosa where we believe there has been minor leakage into that. But none of that is going off site.

Senator GLENN. Have you run a program to see whether that aquifer level has been contaminated or not?

Mr. MORGAN. Oh, yes, sir, we have. And as I say, one area in parts per billion near a well that penetrated into that.

Senator GLENN. As I understand it, that aquifer level furnishes water for much of the southeast part of the country. It is quite a long aquifer.

Mr. MORGAN. The flow in that aquifer, actually it is under a head, discharges into the "Savannah River area." So that the contamination, if it did get into the Tuscaloosa, would not go off site because of the outcropping that they have in Savannah River. That is what I understand through the geologists, sir.

Senator GLENN. My time is up on this round. I do have more questions.

Senator EXON. Thank you, Senator Glenn.

REACTOR POWER LEVELS

Dr. Morgan and Dr. Spencer, I am going to ask you probably the most difficult question you are going to have to face in this hearing, and that is about decisions about reactor power levels. These are complex and not easily understood by those of us who are not scientists, and that includes myself and most of the members of the public.

The difficult question that I would like to ask you is, could you state in plain English that we lay people could better understand what do we mean by all these percentages of power factors that are used from time to time?

I understand that the most recent reduction of power on the L plant reduced that to a level below 50 percent. Do production reactors normally operate at 100 percent, like most commercial reactors do?

How are the upper limits for operations on a reactor set? Is it supposed to operate at 100 and if it is only operating at 50 or 40 is that necessarily improper, bad, or does it indicate that the plant is outmoded and out of date and should be shut down?

Dr. SPENCER. Do you want me to take that, Bob?

Dr. MORGAN. Let me start, sir.

Senator EXON. Be careful now. In lay terms.

Mr. MORGAN. The best way I can describe this process is, we have a problem, as Dr. Spencer said earlier. We have three people that have a foot on the throttle, if you will. And in an analogy that you say the speed limit is 55, but if there are other conditions where there is ice or snow on the road, you do not drive that fast.

So in other words, the normal or nominal 100 percent power level is where everybody says it is safe to be, but when there were some questions that Du Pont had late near Thanksgiving in 1986, they came over and described the concern that they had with potential core damage. In other words, some of the fuel would possibly melt if we ran the reactor at that power level.

And then we had this double-ended pipe rupture because of a flow instability and because of the emergency cooling system.

We immediately lowered the level of those reactors some 25 percent because we did not want to have any core damage in that reactor. There are certain things in the course of this type of an event. We have a downflow. Our cooling slows down.

If you immediately take the pressure off, and it is only very small, 5 psi, and the flow slows down, the elements still have heat in them that has to be taken out. In other words, there is a decay heat curve.

So we are worrying about getting cooling water to the fuel in the process of this decay heat time. And so what we felt is that we have to run that machine where there would not be core damage.

The no-boiling limit that we have now says that you will have no boiling, so there will be absolutely no damage or flow reversal. We believe that we are absolutely conservative and are safe, and when we talk about raising power we are talking about only after we do the full computer analysis of the process and also run experiments to verify that there would not be core damage.

And when we have all that data, then we will consider raising power. We do not have it now.

Senator EXON. Mr. Morgan, that is pretty good. That is something I can basically understand.

I guess what you are saying is that, although the automobile can go 100 miles per hour but the speed limit is 55 miles per hour, if you have a blizzard the speed limit obviously should be reduced further. Arbitrarily and reasonably, you have decided on 40 miles per hour.

Another way of saying that was that you are trying to lean over backwards to be careful in operating those facilities at 40 or 50 percent full capacity.

Mr. MORGAN. That is correct.

Senator EXON. That you are being very conservative; is that what you are saying?

Mr. MORGAN. Yes, sir.

Senator EXON. Dr. Spencer, I almost hesitate to ask a scientist this question. What can you add?

Dr. SPENCER. Let me elaborate in a little bit different way than the way of Mr. Morgan. In terms of determining what the operating power of the reactor, it is a little bit different than the way that power reactors are done in this country.

It really comes down to operation based on controlling temperatures in individual fuel assemblies. So when we look at normal operations, we determine if the reactor will operate stably and be easy to control, and then we look at various possible accidents that might occur.

So we look at, really three sets of conditions. One is normal operation, another is a set of conditions where our protective systems

work, and, finally, a set of incidents where the protective systems do not work as efficiently as we desire.

So then we take all that into account and determine what is the maximum power we can operate and still safely comply with no damage to the reactor and no release of activity.

Senator EXON. Under the worst case scenario, is that correct?

Dr. SPENCER. That is right. So what has happened in these terms, it has caused a reduction of power where questions were raised about dealing with one accident, the emergency cooling or pipe break.

The National Academy never said that they did not think our systems would perform properly. They said, we are not convinced that your analysis is adequate to demonstrate that.

Somebody made an analogy about a car down in Key West, FL, that was safe to drive. But then somebody raised the issue, well, how about if you have ice on the highway? Well, it is not very often that ice storms hit in Key West, Florida. Maybe it is once in a million years or something like that.

But how do you prove that one is not going to be there? Well, you do a number of things. Maybe you monitor the temperature. You monitor weather conditions and things like that.

So we are kind of in that middle ground right now of developing a stronger technical base to verify our systems will work properly. We are making changes to the systems, all those things, so that we can convincingly demonstrate that the reactors can operate back at full power.

Senator EXON. I guess what you are saying, Dr. Spencer, is that ice storms are more prevalent in Nebraska than they are in Key West, Florida. And we can agree on that.

Thank you very much.

Senator Thurmond.

Senator THURMOND. Thank you.

Dr. Spencer, how do you quantify the likelihood of emergency cooling failure? Is it one in ten, one in a million, or what?

Dr. SPENCER. Our analysis says that it is about one in a million years we could anticipate a pipe break, and we have a very detailed program now going in, looking at our piping, all of the welds, all of the valves, all of that. In fact, that analysis says that the probability is really very close to zero.

And in fact, this accident we consider could not really happen because of the ductile nature of the pipe and the inspection program that we have in place.

STATUS OF RESEARCH ON REACTOR EMERGENCY COOLANT REQUIREMENTS

Senator THURMOND. Mr. Morgan, what is the status of the research on reactor emergency coolant requirements that is needed before the Savannah River reactors can be restored to full power, and what is the current estimate of when the necessary research will be completed?

Mr. MORGAN. We have an elaborate program, Senator, being carried on both in the calculational computer activities, plus several physical experiments. We anticipate that these will take approxi-

mately 2 years and that we would anticipate that some time in 1990 we will be able to restore power to close to the full power level.

OPERATING PLANTS SAFELY

Senator THURMOND. Mr. Morgan, do you agree that the Savannah River reactors can be operated safely at their current power levels, and do you believe they can be operated safely at full power, or is that a matter that must await the completion of the ongoing research?

Mr. MORGAN. We know that the power level can be increased. The question is whether that is to 90 percent or 95 percent or whatever. But we know that we will be able to increase the power level, or we believe that, and it is just a question of what that level will be. We do not have that determined yet.

Senator THURMOND. Dr. Spencer, do you have any comment on that?

Dr. SPENCER. I think that is consistent with our program. It is a multifaceted program developing computational methods, experiments, and equipment modifications, all of them aimed at demonstrating the safe operation of the reactors at higher power.

Senator THURMOND. So you agree with Mr. Morgan?

Dr. SPENCER. Yes, sir.

Senator THURMOND. Mr. Morgan, the committee understands that the heavy water reactors at Savannah River have some inherent safety by virtue of their low temperature and low pressure operation. Is this the case, and how does this safety bear on the emergency cooling issue?

Mr. MORGAN. It is true that we do operate at low temperature, low pressure. Therefore, the potential of a brittle failure is minimized. But it is different in a power reactor, where you have a lot of stored energy and high pressure and you can get non-ductile failure.

Senator THURMOND. Dr. Spencer, do you have any remarks on that?

Dr. SPENCER. I think that the point that Mr. Morgan was making was that if you look at the accident in a light water reactor as compared to the Savannah River reactors, the pressure in that system, the maximum pressure, is slightly over 100 psi. In a power reactor it is 1,000 psi. So there is a lot less energy that is to be dissipated in the event of the accident.

Plus we have multiple safety and backup systems to prevent the accident from ever occurring.

NEW PRODUCTION REACTOR

Senator THURMOND. Mr. Morgan, heavy water technology and the Savannah River plant location are both under consideration as candidates for the new production reactor. Could you gentlemen tell the committee what advantages you see in using this technology at the Savannah River plant?

Is there any reason why some other technology, such as high temperature gas reactor technology, could not be located at the Savannah River Plant?

Mr. MORGAN. The Department of Energy has two groups now looking at the new production reactor. One is looking at the technology, what would be the best technology for a new production reactor, and then there is another group looking at the various sites, potential sites for a new production reactor.

We believe that Savannah River is an excellent site for any technology, but the experience that we have there is probably more aligned to the heavy water reactor. But we believe it is a good site for a new production reactor.

Senator THURMOND. Dr. Spencer, would you comment on that?

Dr. SPENCER. I would also concur. We certainly think the site is an excellent location for a new production reactor. Not only the reactor experience, but all the infrastructure in terms of fuel production, reprocessing and waste handling is all in place and functioning very well.

The heavy water reactor is also an excellent concept for production because it has the best neutron economy. It is the most efficient reactor that you could design, has the most extra neutrons that can be used for producing the product. That is the goal of a production reactor, the production of isotopes through neutron irradiation.

Senator THURMOND. Thank you.

I believe my time is up.

Senator EXON. Thank you, Senator Thurmond.

Senator Glenn.

Senator GLENN. Thank you, Mr. Chairman.

Mr. Kaspar, I am a little mystified as to exactly why we go through this year after year after year. As I said earlier, we have 21 GAO reports here that point out different deficiencies in the system. They are all valid.

They have not been refuted by anybody in DOE, and yet DOE has been slow to respond. We could get down into all sorts of details as to whether a badge was thrown down or whether the newspaper reports are adequate.

But why on earth, with GAO reports going clear back into the seventies, does DOE drag its feet in taking action as a result of our activities here? And in particular, I think we were beginning to get a lot of newspaper coverage. Not that that is what we were out after; we were not.

But after I began investigating Fernald and got going on some of these issues and had some other studies made by GAO, it turned out this was obviously a DOE-wide problem where safety and health had been ignored over too many years. And it was obvious to everyone.

And so DOE finally just established, I guess to keep us quiet up here as much as anything else, they established an Assistant Secretary for environmental safety and health issues under Mary Walker. But DOE really did not give the kind of support to that office that I thought was necessary.

Why were the GAO reports ignored for so long? We have got a lot of words and no action. You go out to these plants and look at them. Some of them are atrocious. They would not even begin to pass an NRC inspection.

Why have we not done more? Is it expensive? I felt like Paul Revere up here, because I have been telling people at every hearing that we have not fully addressed this problem yet. We are going to need tens upon tens of billions of dollars to clean up the mess created by 35 years of neglect.

The newest plant we have is 25 years old. And so it is a big problem. But why on earth have we not done it? Why have we just now gotten started?

I spent 3 years trying to get an estimate out of DOE as to what it is going to cost. What is our date, June 1? July 1, we finally have a commitment they will give us a first estimate on what the cleanup cost is going to be. And it has taken 3 years, for heaven's sakes, to get us to that.

SAFETY AND HEALTH PROBLEMS

Why? Why on earth can we not get people going on this problem? I am not interested in picking you guys apart here this morning as to who threw what where on the table or whatever. But when is DOE going to say: okay, this is no longer a secret. We have got big safety and health problems, we are contaminating aquifer levels, we are closing up wells, we are endangering people's health.

I am on your side, for heaven's sakes. I am not anti-DOE. I am trying to get help for you to clean the production complex up. But DOE keeps fighting us. They keep fighting at every step of the way.

And why on earth is it that we have to have 21 GAO reports here and us up here screaming about this problem? We get ignored. We get ignored as though there is just nothing to worry about, it will all go away. We are told DOE is working on it, they are cleaning up something.

And yet it does not occur. The National Academy of Sciences report and virtually every other report says you should not increase your power down there. Well, I will quote this to you in a little bit here, but then you say, we are up 3 percent at Savannah River now. Are we really going to be safe?

Why on earth are you not out stating what the real problem is in the way of safety and letting us help you get this thing cleaned up? Instead of that, our concerns get ignored. And every time I start yelling up here, you form a new advisory panel. We have now got a new internal panel over there and I hope to heaven it works.

But I have gotten so frustrated. I put in legislation, as you know, that says, okay, if the panel does not get action from the Secretary of Energy, this is so important to the safety and health of this Nation of ours that the President will have the final say.

Augusta is what, 20 miles away from Savannah River. If the wind is blowing in that direction and you had something go up, downtown Augusta catches it if the wind is blowing the right direction.

Why do you not let us help you on this problem, instead of fighting us every step of the way? My legislation that you people have fought and are mounting a campaign against, all it says is, if safety concerns are not given adequate attention and if the panel says that it is truly a high priority safety and health matter, the panel's

recommendation will get bucked to the President to decide whether our production at that time in our history is more important than the safety and health concerns.

And there are times when that might be exactly the case, and that is the reason I bucked it to the President. And you are fighting it.

I see the letters. I get the letters, I get the calls. Other Senators have asked me about it. I do not undertand why you are not working with us on this bill so we can put this behind you, instead of against us.

I do not want to continue being a critic of DOE, I honestly do not. But as DOE has stonewalled us for about the 9 years that I have been following this issue and the 5 years that I have been working on it firsthand myself, spending a lot of time on it, I have become convinced that DOE is just trying to put out the fires with the attitude of: do not get criticized, do not let it happen on my watch.

Why do we not work together on this to solve the real problem, and let us up here, let members of this committee go to work trying to get a budget for you that will let you start cleaning up. You cannot clean up everything on the budget you have right now, and everybody knows that.

Plus we do not even know how to clean up an aquifer level. How do we do that, Mr. Morgan? I do not know how we do that. You say we have got maybe a little contamination at the aquifer level. I do not know how we clean that. We flood it, we do something to disperse the pollution, I guess, or dilute it, and that is about all we know how to do, really.

Why do we not work together on this, instead of fighting one another I do not understand it. Do you want to answer?

Mr. KASPAR. Certainly. Certainly I cannot give you any valid excuses for why audit reports going back to the seventies did not get embraced.

There have been some, I think, noteworthy accomplishments over the last couple of years. We are bringing all our plants—where a few years ago we claimed exemption from environmental law, we are bringing our plants to interim status and getting the plants permitted within the environmental community.

You can look at the Fernald plant, where the last time I looked air releases were down by about a factor of 10, an improvement.

Senator GLENN. That is good. But it took a lot of blood, sweat, tears and pressure to do that, too, which it should not have taken.

OAK RIDGE NATIONAL LABORATORY

Mr. KASPAR. At Oak Ridge National Laboratories, generation of low level radioactive waste is down about 80 percent in the last couple of years. If you look at just the defense program's budget for fiscal 1989 that is up here for review, we are in the cross-cut budget, we are looking at about a billion dollars' worth of environmental improvements.

A significant fraction of our budget is being earmarked to go into environment and safety improvements. So that commitment is there, and obviously we have to go forward.

As for the oversight issue itself, certainly the Department is on record as agreeing that we need to have independent oversight to make sure that that oversight is effective and open to the public. The only thing I think we have disagreed on is some of the process issues.

Senator GLENN. Only the part about bucking it on to the President. Why do you disagree with that?

Mr. KASPAR. It is a question of having the Secretary be able to make those decisions himself.

Senator GLENN. What if the Secretary decides that he wants to cover up something, which has been done in the past, which has been done over a number of years?

Mr. KASPAR. Not with an independent advisory group whose findings ought to be public.

INDEPENDENT ADVISORY GROUP

Senator GLENN. Why do we need an independent advisory group? We know what the problems are inside DOE. Why do we need outside people to push?

You have experts. You know what is needed. Why are you not pushing for it?

Mr. KASPAR. And we are, and I think there is a commitment by this administration to get those problems fixed. The difference is that we ought to have a process that is not dependent on this particular Secretary being——

Senator GLENN. Exactly the point I have made in my legislation. You have made it in spades for me. That is exactly the point. It should not be dependent, it should not be dependent just on one administration or the next. The safety and health of the workers and the people in the communities are too important to be dependent on whether a particular Secretary of Energy is hard-nosed or not hard-nosed, whether he is concerned about safety or production.

It should be guaranteed that we are going to do everything we can for safety, and that guarantee does not exist. The reports are full of it—all the GAO reports, your own study reports, EG&G reports, all of them. We have a dozen of them here that say that safety has not received the emphasis it should have.

And I want to work with you on this, I truly do. I want to fight for a budget that will let you really have the safety that we have at our commercial nuclear electrical plants.

I am at a loss here as to why we have to keep fighting over this, and we have been doing it year after year after year. Why has it taken me 3 years to even get a DOE commitment to make the first estimate on what cleanup cost will be?

It has taken 3 years to just get a commitment that by July 1 we will even have the first estimate. Why?

Mr. KASPAR. I was not at headquarters 3 years ago. I cannot answer that question.

Senator GLENN. So we are back into the issue of continuity, who is emphasizing what at what time. My legislation is needed so we get some continuity.

Yes, I did get carried away, Mr. Chairman. I am sorry.

Senator EXON. Thank you, Senator Glenn.

Gentlemen, to try and put this in perspective, I share the concerns of my friend and colleague from Ohio in many areas. We do not happen to agree on some parts of his legislation, especially with regard to the Advisory Committee, whether that is advisory to the Secretary or whether it has discretion over the Secretary.

I will simply point out, to try and put this all into perspective, that a report that has just been released—in fact, it was released in December—a report called "Safety Issues at the Defense Production Reactors" by the National Academy of Sciences, and in there the National Academy of Sciences recommends this:

"The committee recommends that an independent external safety oversight committee, advisory to the Secretary of Energy, be established."

I mean, "advisory to the Secretary of Energy" is a position that I have held for a long, long time. And evidently the National Academy of Sciences agrees with that.

PLANTS IN MOTHBALL OR STANDBY STATUS

Mr. Kaspar, to follow up, though, on the general line of questioning by Senator Glenn, much of which I agreed with, there is a feeling up here on the Hill that the reason the Department of Energy takes plants and puts them in mothballs or standby status, such as has recently been announced by the Secretary with regard to the Hanford plant, is that that is done not so much for the reason of any of these plants ever coming back on line. It is done because by putting them into standby capacity they do not fall under legislation currently existing which says that it they are closed, during the closing process all of the environmental act procedures are mandated to be followed by law.

In other words, putting plants in standby is another way of overlooking or putting off the critical problem of cleaning things up.

Is that in your opinion a fair assessment of why plants are placed on standby status, as opposed to closing them up?

Mr. KASPAR. The plants that I am familiar with that have been put into a standby status were done for good and valid reasons. Two recent examples have been the K–25 plant in Oak Ridge, which had been put into a standby condition following a determination of the capacity needs for reactor fuel worldwide. That has recently moved toward a shutdown scenario.

While I believe in that particular case it went into standby for good cause, contingency was needed at the time. Now the process has run the rest of the course and it is in shutdown condition, where all the other requirements come into play.

As far as the N reactor is concerned, the decision to put N reactor in a standby mode was the result of redefined needs coming from the Defense Department. And we think it is prudent at this time, given the amount of work that has already been done on that reactor, that for some period of time we have it in standby, in case things should change.

Senator EXON. Your answer is that you do not subscribe to the theory that plants are placed on a standby status rather than closing them down to stay away from some of the expense that would

be required if they were closed down to meet the standards of the law?

Mr. KASPAR. I do not believe that there is a ruse like that at play. There are a number of facilities on our excess facilities list that need to be dealt with.

SAFETY ISSUES AT DEFENSE PRODUCTION REACTORS

Senator EXON. Mr. Kaspar, last year the National Academy of Sciences issued a report on safety issues at the defense production reactors. Can you tell us how DOE plans to address the recommendations made in that report and whether this recent adjustment at Savannah River is related to implementing their recommendations?

Mr. KASPAR. There are a number of things that the Department has to do in response to that report, some of which are structural and organizational within the Department, and we are getting on with that. Included in that is the establishment by Secretary Herrington of this independent advisory committee on safety.

The things that we are talking about here this morning, things like understanding severe accidents better, getting on with probabilistic risk assessments, all of those things were in the National Academy of Sciences report. They are under way and are things that we will have to complete aggressively.

There is a plan due shortly—in fact, it is overdue now—to put in place a detailed response to that National Academy of Sciences report, both the management side as well as the technical side.

Senator EXON. Thank you, Mr. Kaspar.

Senator Thurmond.

Senator THURMOND. Thank you.

SUMMARY STATUS OF GAO AUDIT REPORTS

Mr. Kaspar, I think it would be very helpful if the Department can provide for the record a summary status on each of the GAO audit reports that Senator Glenn has referred to.

Mr. KASPAR. Okay.

Senator THURMOND. I think it might help to clarify the situation, to go into the official record about that, because as I understand it the Department has provided a response to each of the GAO reports.

[The material referred to follows:]

Attached is a status report on each of the 21 General Accounting Office (GAO) Reports described by Senator Glenn in his remarks during the hearing.

1. Nine reports for which the Department has completed corrective action:

Nuclear Waste: Unresolved Issues Concerning Hanford's Waste Management Practices (GAO/RCED–87–30; November 1986).

Nuclear Waste: Department of Energy's Transuranic Waste Disposal Plan Needs Revision (GAO/RCED–86–90; March 1986).

DOE's Safety and Health Oversight Program at Nuclear Facilities Could Be Strengthened (GAO/RCED–84–50; November 1983).

Decommissioning Retired Nuclear Reactors at Hanford Reservation (GAO/RCED 83–104; April 1983).

Cleaning Up Nuclear Facilities—An Aggressive Unified Federal Program Is Needed (GAO/RCED 82–40; May 1982).

GAO's Response to DOE on EMD–81–108, "Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities" (EMD 82–36; January 1982).

Better Oversight Needed for Safety and Health Activities At DOE's Nuclear Facilities (EMD 81-108; August 1981).

Department of Energy's Safety and Health Program For Enrichment Plant Workers Is Not Adequately Implemented (EMD 80-78; July 1980).

Decommissioning Hanford Reactor (EMD-79-20; January 1979).

2. Four reports for which the Department is taking corrective action:

Nuclear Energy: Environmental Issues at DOE's Nuclear Defense Facilities (GAO/RCED-86-192; September 1986).

Environment, Safety and Health: Environment and Workers Could Be Better Protected at Ohio Defense Plants (GAO/RCED-86-61; December 1985).

Environment, Safety and Health: Information on Three Ohio Defense Facilities (GAO/RCED-86-51FS, November 1985).

Nuclear Safety: Safety Analysis Reviews for DOE's Defense Facilities Can Be Improved (GAO/RCED-86-175; June 1986).

3. Seven reports which required no corrective action:

DOE's Plutonium Facility (GAO/RCED-85-3; September 1985).

Nuclear Safety: Comparison of DOE's Hanford N-Reactor With the Chernobyl Reactor (GAO/RCED-86-213 BR; August 1986).

Nuclear Waste: Impact of Savannah River Plant's Radioactive Waste Managment Practices (GAO/RCED-86-143; July 1986).

Nuclear Energy: A Compendium of Relevant GAO Products on Regulation, Health, and Safety (GAO/RCED-86-132; June 1986).

Environment, Safety and Health: Status of Department of Energy's Implementation of 1985 Initiatives (GAO/RCED-86-68FS, March 1986).

Department of Energy Acting To Control Hazardous Waste At It's Savannah River Nuclear Facility (GAO/RCED-85-23; November 1984).

GAO's Analysis of Alleged Health and Safety Violations at the Navy's Power Training Unit at Windsor, Connecticut (EMD-81-19, November 1980).

4. One report which recommended corrective action by the Congress:

Congress Should Increase Financial Protection to the Public From Accidents at DOE Nuclear Operations (EMD-81-11; September 1981).

GAO REPORT NO. RCED-87-30; NOVEMBER 1986

Title.—Nuclear Waste: Unresolved Issues Concerning Hanford's Waste Management Practices

Summary.—GAO was requested to review DOE's management and disposal of defense waste at its Hanford facility, and determine how the Department complies with the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in conducting these activities.

Recommendation.—DOE require Hanford to report to EPA and Washington State all sites and units previously and currently used to treat, store, and dispose of waste, including those considered to be byproduct and those contaminated by unplanned releases; and the regulatory authority that controls the management, disposal, and/or corrective actions for all sites and units identified.

Action Planned.—Concur. Recommendation implemented and completed.

Current Status of Action.—Closed. On May 15, 1987, Richland Operations Office transmitted copies of the Hanford Site Waste Management Units Report to EPA region X and the GAO in Portland, Oregon. The report documents all sites and units previously and currently used to treat, store, and dispose of waste and identifies the regulatory authority controlling those sites and units. The action is complete.

GAO REPORT NO. RCED-86-90; ISSUED 03/21/86

Title.—Nuclear Waste: Department of Energy's Transuranic Waste Disposal Plan Needs Revision

Summary.

Recommendation.—DOE revise the Defense Waste Management Plan (DWMP) and submit it to all legislative, authorization, appropriations, and oversight committees.

Action Planned.—Concur.

Current Status of Action.—Closed. The plan was completed and submitted to the Congress on July 16, 1987.

GAO REPORT NO. RCED–84–50; NOVEMBER 1983

Title.—DOE's Safety and Health Oversight Program at Nuclear Facilities Could Be Strengthened

Summary.—GAO was requested to review the adequacy of DOE's safety and health oversight programs.

Recommendation.—DOE's safety and health program should undergo a major reorganization to provide it with the authority and independence necessary for an effective safety and health program at its facilities.

Action Planned.—Concur.

Current Status of Action.—Closed. The Department's 1985 environment, safety and health initiatives satisfy the GAO recommendation.

GAO REPORT NO. RCED–83–104; APRIL 1983

Title.—Decommissioning Retired Nuclear Reactors at Hanford Reservation

Summary.—GAO was requested to review DOE's strategy for decommissioning eight retired plutonium production reactors at it's Hanford Reservation in Washington State. This was a followup to a previous GAO report, "Decommissioning Hanford Reactor", (EMD–79–20; January 1979).

Recommendation.—The report contained no recommendations, but did identify some concerns and suggestions for DOE consideration in the development of a decommissioning strategy.

GAO REPORT NO. EMD–82–40; ISSUED 05/25/82

Title.—Cleaning Up Nuclear Facilities—An Aggressive and Unified Federal Program is Needed

Summary.—GAO was requested to review Federal efforts and activities directed at cleaning up nuclear facilities and sites once they are no longer needed. The review was made as part of GAO's continuing effort to identify issues in the nuclear area which will provide increased public health and safety through better Federal program administration. Four Federal agencies were discussed—DOE, DOD, NRC and EPA.

Recommendation 1.—DOE establish a decommissioning program that specifies criteria for selecting tentative decommissioning methods during the facility planning phase.

Action Planned.—Concur.

Current Status of Action.—Closed. DOE Order 5100.5 (OMB Budget Process) and DOE Order 5100.6 (Congressional Budget Process) were revised to include the requirement to identify a tentative method of decommissioning and associated cost. These orders were issued in July 1983 and October 1983, respectively. This action is consistent with the GAO recommendation.

Recommendation 2.—Resubmit DOE's proposed legislation to provide the necessary authority which it currently lacks to proceed with remedial cleanup of all sites under the Formerly Utilized Sites Remedial Action Program.

Action Planned.—Concur.

Current Status of Action.—Closed. DOE submitted proposed legislation to the Office of Management and Budget (OMB) on May 11, 1982, that would provide DOE with the necessary authority to proceed with remedial cleanup of all sites under the Formerly Utilized Sites Remedial Action Program.

GAO REPORT NO. EMD–82–108; ISSUED 08/04/81

Title.—Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities

GAO REPORT NO. EMD–82–36; JANUARY 1982

Title.—GAO's Response to DOE on EMD–81–108, "Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities"

Summary.—GAO was requested to determine if the Nuclear Regulatory Commission or some other form of regulation would be preferable to the DOE oversight program in existence (in 1981) for safety and health matters at DOE facilities. GAO produced a second report, in response to DOE's comments on its first report, and recommended that DOE reconsider its position. As stated more specifically below, the ES&H initiatives begun in 1985 satisfy the GAO recommendations contained in these reports.

Recommendation 1.—The Secretary of Energy should consider a major reorganization of DOE's safety and health program to correct what GAO felt were underlying

organizational problems—a lack of headquarters authority and the decentralized nature of the program.

Action Planned.—DOE disagreed with the GAO recommendation. The Department in its October 7, 1981 response to the Congresswoman Schroeder on this GAO report, sought to address the shortcomings identified by: (1) explaining DOE's basic approach to safety and health oversight, (2) explaining the reasons for DOE's reliance upon that approach, (3) emphasizing the favorable results which the DOE approach had produced up to that time, and (4) responding to specific points raised in the report, itself. A second GAO report (same title) was issued as a supplement, in January 1982, in response to the DOE comments. The Department, at that time, continued to disagree with the GAO recommendation to reconsider its position relative to oversight and cited further improvements made to the safety and health program.

Current Status of Action.—Since coming to the Department of Energy in May 1985, Secretary Herrington's commitment to a strengthened environment, safety and health program has led to dramatic improvements in how DOE conducts its internal oversight program. In September 1985, the Secretary announced a series of ES&H initiatives, including consolidation of oversight responsibility for the environment, safety and health function. DOE established a new Office of Environment, Safety and Health in 1985, and consolidated and upgraded oversight responsibility for ES&H functions under an Assistant Secretary for Environment, Safety and Health. The independence and authority of this Office has been greatly expanded to include actively overseeing the environmental and safety aspects of the Department's ongoing operations, and the Assistant Secretary for Environment, Safety and Health has been given authority to curtail or suspend operations. These actions satisfy the intent of the GAO recommendation.

Recommendation 2.—DOE takes steps to correct deficiencies in technical reviews of Safety Analysis Reports. Noting that DOE staff lacked the technical expertise, GAO suggested that DOE consider a cooperative agreement with the NRC, and that Congress consider legislation to require NRC to review and evaluate a number and variety of DOE's nuclear facilities and processes; including detailed review of plant operations, the contractor's safety analysis methodology and report, and actions taken to mitigate hazards.

Action Planned.—In 1981, the Department did not agree with GAO's recommendation stating that NRC lacked expertise in the technology associated with DOE production nuclear reactors and operations. Given this limited NRC expertise, DOE did not feel that NRC involvement would improve the safety of DOE's nuclear facilities.

Current Status of Action.—In response to a subsequent GAO Report, "Nuclear Waste: Unresolved Issues Concerning Hanford's Waste Management Practices" RCED–87–30 issued 11/4/86, the Department agreed to GAO's recommendations and has taken significant steps to improve SARs reviews.

With respect to GAO's suggestion that DOE consider a cooperative agreement with NRC, the Department has taken actions that more than satisfy the intent of this suggestion. Secretary Herrington has endorsed outside oversight as an additional means to provide assurance that our nuclear facilities will be operated under a safety regime that protects DOE's workers, minimizes risks of accidents, and is recognized as effective by the public. Outside experts have been used both in the Department's internal appraisal program and in a number of external reviews requested by the Secretary. An Advisory Committee on Nuclear Facility Safety has been established. This independent, external oversight committee, reporting directly to the Secretary, is comprised of recognized experts from outside DOE. The Committee has broad authority to review Departmental activities at the production reactors and will provide technical advice to assist the Secretary in carrying out his statutory responsibility for safe operation of DOE facilities. Also, DOE has executed an agreement with the Institute of Nuclear Power Operations (INPO) that will provide DOE and its contractors access to current industry data and to INPO technical assistance.

GAO REPORT NO. EMD–80–78; ISSUED 07/11/80

Title.—Department of Energy's Safety and Health Program for Enrichment Plant Workers Is Not Adequately Implemented

Summary.—GAO was requested to evaluate the Department's program for ensuring the safety and health of workers at the Department's three uranium enrichment plants.

Recommendation 1.—DOE should ensure that inspections and appraisals are performed as DOE procedures require, and all employee complaints from these facili-

ties should be investigated and followed-up on by DOE's Oak Ridge Operation Office.

Action Planned.—Concur.

Current Status of Action.—Closed. Oak Ridge Operations Office assigned additional personnel to its Safety and Health Control Division, established safety offices at each of the enrichment plant sites, and strengthened existing procedures.

Recommendation 2.—DOE should take action to provide increased independence and objectivity in the Oak Ridge Operations Office safety and health program.

Action Planned.—Concur.

Current Status of Action.—Closed. Oak Ridge Operations Office established the position of Assistant Manager for Safety and Environment reporting directly to the Manager. The Assistant Manager for Safety and Environment is responsible for all health, safety and environment programs for the Oak Ridge Operations Office and has no responsibility for production goals and objectives, or any plant operations.

GAO REPORT NO. EMD–79–20: JANUARY 1979

Title.—Decommissioning Hanford Reactor

Summary.—GAO was requested to review the Department of Energy's long and short-term disposition plans for dealing with its highly contaminated nuclear sites. GAO's report focused on a project involving the decontamination, decommissioning, and dismantling of a shutdown reactor and related facilities at the Hanford site.

Recommendation.—That the project be delayed until: Studies are completed and decisions are made on the future of Hanford either as a site for a nuclear waste repository or a site that will forever be dedicated to nuclear actitivies; criteria are developed for the cleanup and return of nuclear sites for unrestricted use; and the environmental impact of the 100–F project has been adequately assessed.

Action Planned.—Concur with the intent of GAO's recommendation.

Current Status of Action.—Closed. The Department agreed that a long-range plan for decommissioning the Hanford reactor should be developed prior to project implementation, and agreed that the long-range plan would evaluate alternative approaches to decontamination and decommissioning these inactive reactors and would include an environmental impact statement, with public comment, prior to finalizing the long-range plan.

GAO REPORT NO. RCED–86–192; SEPTEMBER 1986

Title.—Nuclear Energy: Environmental Issues at DOE's Nuclear Defense Facilities

Summary.—GAO was requested to identify key environmental issues at DOE defense facilities and evaluate the status of DOE's efforts to strengthen its environmental, safety and health oversight programs. GAO focused its review on nine diverse DOE defense facilities located at seven sites within the jurisdictions of four DOE operations offices.

Recommendations 1.—DOE establish a groundwater and soil protection strategy. Such a strategy should reflect DOE policy on the extent groundwater and soil can become contaminated and include specific guidelines, to the extent practical, to protect groundwater and soil around DOE facilities.

Action Planned.—Concur.

Current Status of Action.—Open. A groundwater policy that encompasses groundwater and soil protection is under development. Target date for issuance of the policy statement is 8/1/88.

Recommendation 2.—DOE provide to the Congress a comprehensive report setting forth DOE's plans, milestones, and cost estimates for bringing DOE defense facilities into compliance with all applicable environmental laws.

Action Planned.—Concur.

Current Status of Action.—Open. The DOE Environmental Survey, presently underway, will provide this information. It is proceeding on schedule with an FY 1989 completion date. Additionally, at the June 17, 1987, hearing with Senator Glenn, the Under Secretary committed to providing a plan, based on available data, by July 1, 1988. Development of the plan has been initiated.

Recommendation 3.—DOE provide for independent inspections of DOE operations in regard to the treatment and disposal of any mixed-waste that may be exempt from RCRA regulation.

Current Status of Action.—Closed. As a result of the policy review of the byproduct rulemaking, the Department issued a final rule on May 1, 1987 that subjects all DOE radioactive waste which also contains chemically hazardous components ("mixed-waste") to EPA and state regulations under RCRA. Thus, mixed-waste will

not be exempt from RCRA coverage and additional and independent inspections will not be needed given EPA and state jurisdiction over such materials. No further action is necessary in response to this recommendation.

Recommendation 4.—DOE revise DOE Order 5480.2 governing hazardous and mixed-waste to reflect how waste operation will be managed in the future.

Action Planned.—Concur.

Current Status of Action.—Open. A DOE Notice has been issued which cancelled the existing Order. A replacement Order is being drafted which will outline the current DOE position that all radioactive and hazardous wastes are regulated respectively by the Atomic Energy Act (AEA) and the Resource Conservation and Recovery Act (RCRA) as to their radiological and hazardous components. Until a replacement Order is published, DOE facilities have been advised to consult DOE HQ on policy matters concerning the management of hazardous and radioactive mixed waste.

GAO REPORT NO. RCED–86–51FS; ISSUED 11/85

Title.—Environment, Safety and Health: Information on Three Ohio Defense Facilities

GAO REPORT NO. RCED–86–61; ISSUED 12/13/85

Title.—Environment, Safety and Health: Environment and Workers Could be Better Protected at Ohio Defense Plants

Summary.—As a result of radioactive air releases between September and December 1984 from the Feed Materials Production Center, GAO as requested to examine DOE's environment, safety and health programs at the three Ohio facilities. GAO produced the above two reports in response to this request.

Recommendation 1.—The Secretary of Energy should require that radiological monitoring guides be mandatory for all DOE facilities.

Action Planned.—Concur. DOE will review and update the existing guides, determine those provisions that can be adopted as mandatory requirements, and those that are more appropriate to retain as guidance.

Current Status of Action.—Open. A DOE Order on Radiation Protection of the Public and the Environment is being developed that will include DOE's environmental monitoring requirements. The target date for issuance of the new order is July 1988.

Recommendation 2.—A coordinated DOE/State/Contractor system should be developed to verify independently contractor reported environmental monitoring data.

Action Planned.—Concur. Recommendation is being implemented.

Current Status of Action.—Open. A DOE Order on General Environmental Protection Program Requirements is being developed that will include DOE's environmental monitoring requirements. The new Order will require each DOE environmental monitoring program to contain an independent data verification element that provides evaluations by outside groups. The target date for issuance of the new order is July 1988.

GAO REPORT NO. RCED–86–175; JUNE 1986

Title.—Nuclear Safety: Safety Analysis Reviews for DOE's Defense Facilities Can Be Improved

Summary.—GAO was requested to review the adequacy of DOE's safety analysis reviews for its existing nuclear defense facilities. GAO reviewed the SARs for eight nuclear defense facilities.

Recommendation 1.—Complete and approve SARs for all high hazard facilities in a timely fashion.

Action Planned.—Concur. DOE committed to have all SARs for existing high hazard facilities reviewed and approved by the end of FY 1987.

Current Status of Action.—Closed. All existing high hazard facilities have approved SARs. Action complete.

Recommendation 2.—Require that SARs include a detailed comparison of the plant against current DOE design criteria, highlighting and explaining any deviations.

Action Planned.—Concur. DOE committed to requiring that such evaluations be incorporated into the SARs either through revisions of appropriate sections of the SAR or as an appendix. For existing SARs, this evaluation would be added to the SAR at the time of the next normal update. DOE will incorporate this requirement into the DOE Orders.

Current Status of Action.—Closed. Page changes to Order DOE 5481.1B, "Safety Analysis and Review System," incorporating the above recommendations into that Order were issued on May 19, 1987. Action completed.

Recommendation 3.—Develop more consistent requirements to be followed in preparing SARs, outlining appropriate methodologies and assumptions to be used in analyzing accidents and their consequences.

Action Planned.—Concur. With regard to consistency in approaches used in accident analysis, two actions are being taken: first, updated and improved DOE Headquarters guidance will be provided; and second, EH will review select SARs of DOE nuclear facilities.

Current Status of Action.—Open. Additional guidance has been provided including:

"Guide to Radiological Accident Considerations for Siting and Design of DOE Nonreactor Nuclear Facilities" dated January 1986.

"Nonreactor Nuclear Facilities Standards and Criteria Guide" dated September 1986.

DOE Order 6430, "General Design Criteria", revised February 1988.

Additional actions being taken include:

General guidance for the preparation of SARs has been drafted and is undergoing internal review.

Guidance for analyzing natural phenomena hazards is being prepared.

The Nuclear Air Cleaning Handbook is being updated.

GAO REPORT NO. RCED–85–3; SEPTEMBER 1985

Title.—DOE's Plutonium Facility

Summary.—GAO was requested to identify the extent and causes of the problems associated with the building, and evaluate the implications of those problems in terms of costs and worker health and safety.

Recommendation.—The report did not contain any recommendations; it did, however, identify several issues requiring resolution. The Department is addressing these issues as part of its overall study on the modernization of the defense complex.

GAO REPORT NO. RCED–86–213BR; AUGUST 1986

Title.—Nuclear Safety: Comparison of DOE's Hanford N-Reactor With the Chernobyl Reactor

Summary.—GAO was requested to provide to the Congress information on the similarities and differencies in design and safety features of N-Reactor and the Soviet's reactor near Chernobyl, DOE's program to extend the life of N-Reactor, and emergency preparedness plans for N-Reactor.

Recommendation.—The report contained no recommendations.

GAO REPORT NO. RCED–86–143; JULY 1986

Title.—Nuclear Waste: Impact of Savannah River Plant's Radioactive Waste Management Practices

Summary.—GAO was requested to review the radioactive waste management practices at the Department's Savannah River Plant to determine if these practices have adverse environmental impacts.

GAO found that:

Radioactivity contained in the environment outside the SRP boundary was well within applicable standards.

Within the plant boundary, some of the surface streams contained elevated levels of radioactivity, and the soil and groundwater at several waste storage and disposal sites were highly contaminated with radioactivity.

SRP has taken several actions and has other actions underway to reduce radioactive releases into the environment.

GAO recognized that SRP is preparing an EIS to evaluate the impact of its waste management practices on groundwater quality and to assess remedial actions that may be needed.

Recommendation.—The report contained no recommendations.

GAO REPORT NO. RCED–86–132; JUNE 1986

Title.—Nuclear Energy: A Compendium of Relevant GAO Products on Regulation, Health and Safety

Summary.—As a result of the Chernobyl accident, there has been heightened interest in environment, safety and health issues pertaining to nuclear power. GAO

received numerous requests for audits/evaluations. The subject report was prepared to give Congress a compendium of GAO's past work in the nuclear area.

Recommendation.—The report contained no recommendations.

GAO REPORT NO. RCED–86–68FS; MARCH 1986

Title.—Environmental, Safety and Health: Status of Department of Energy's Implementation of 1985 Initiatives

Summary.—GAO was requested to monitor the Department of Energy's overall effectiveness in implementing the Secretary's ES&H initiatives, and to provide periodic briefings to his staff. GAO provided a briefing to Glenn's staff on February 10, 1986, and the subject "fact sheet" report in March 1986.

Recommendation.—The report contained no recommendations.

GAO REPORT NO. RCED–85–23; NOVEMBER 1984

Title.—Department of Energy Acting To Control Hazardous Waste At It's Savannah River Nuclear Facility

Summary.—GAO was requested to evaluate the Department's efforts to control and cleanup groundwater contamination from hazardous wastes at the Savannah River Plant.

GAO found that:

While wastes discarded in the past in that part of the plant known as the M-Area (the fuel fabrication plant) have contaminated groundwater in the immediate vicinity, to date they have had no impact outside of the Savannah River Plant boundaries.

DOE and DuPont have taken actions to cleanup the M-Area.

Since 1981, DOE and DuPont have acted to identify and monitor other sites at the Savannah River plant where wastes were disposed of, and have prepared an environmental action plan that prioritizes work needed to prevent further environmental damage.

DOE has also established formal agreements to improve coordination with EPA and South Carolina officials in dealing with hazardous waste disposal.

Recommendation.—The report contained no recommendations.

GAO REPORT NO. EMD–81–19; NOVEMBER 1980

Title.—GAO's Analysis of Alleged Health and Safety Violations at the Navy's Power Training Unit at Windsor, Connecticut

Summary.—GAO was requested to investigate allegations of radiation and industrial health and safety violations at the Windsor facility. In GAO's opinion, none of the events forming the bases for the allegations were indicative of basic health and safety-related weaknesses in the facility's operations.

Recommendation.—The report contained no recommendations.

GAO REPORT NO. EMD–81–11; SEPTEMBER 1981

Title.—Congress Should Increase Financial Protection to the Public From Accidents at DOE Nuclear Operations

Summary.—In the event of a nuclear accident at a Department of Energy (DOE) facility, liability protection for public injury would be covered by the Price-Anderson Act. The act establishes the sources and amount of funds to cover public injury and provides a basis for relatively speedy compensation. The act also limits the amount of funds that are readily available from compensation.

GAO believes that since it is the Nation's policy to foster the continued development of nuclear power, the protection provided DOE contractors by the Price-Anderson Act is needed, especially since alternative methods for insuring the public against the potential hazards of a catastrophic nuclear accident do not provide as much financial protection as does the Price-Anderson Act.

In GAO's opinion, public protection under the Price-Anderson Act should be increased for DOE contractor operations. Certain provisions in the Price-Anderson Act and its implementation (1) serve to provide less public financial protection from accidents occurring at DOE contractor-operated facilities than at licensed commercial facilities and (2) may not adequately protect the public from the financial consequences of a catastrophic nuclear accident. Finally, the act does not clearly establish whether evacuation costs in all cases would be covered.

Recommendation.—GAO recommended that Congress correct the above-noted problems.

Senator THURMOND. In this Washington Post article, I want to ask all three of you this question, and I quote here from this article dated February 22, 1988: "According to several sources, the issue erupted in an acrimonious meeting February 8, at which a top Du Pont scientist threw his security badge on the table in front of the Savannah River manager, Robert L. Morgan, and threatened to go public unless DOE reduced power levels. 'Morgan blinked,' one source said."

Further over in the article: "According to sources"—I do not know what sources; he does not say—"the Du Pont scientist told DOE managers late last year that they could not defend the high power level and urged an immediate reduction. After weeks of intensifying conflict, the issue came to a head in the February 8 meeting when Joseph Spencer, head of the Du Pont laboratories, threw his security badge on the table and, in the words of one source, 'dared Morgan to pick it up.' "

Mr. Morgan, was that true?

Mr. MORGAN. Absolutely not.

Senator THURMOND. Mr. Kaspar, was that true? Oh, you were not there.

Mr. KASPAR. No, I was not there.

Senator THURMOND. Dr. Spencer, was that true?

Dr. SPENCER. Absolutely not true.

Senator THURMOND. Now, what is the motive for just such articles as this that have been published by some people? Do they not like nuclear energy at all maybe, or do they have some other motive for trying to destroy the power we have to protect our Nation in the form of a nuclear deterrent, that has caused such articles to be written?

Here is an article about these people who were there: Mr. Morgan, who is the Department's manager down there, and Dr. Spencer, whom this writer says threatened to go public.

Did you threaten to go public?

Dr. SPENCER. Absolutely not. There was no reason to go public. We agreed to reduce power.

Senator THURMOND. Did you throw your badge down on the table and dare Morgan to pick it up?

Dr. SPENCER. Absolutely not. As I said earlier, I just took it in my hand and set it down on the table, really kind of in jest. The meeting was already over and we were getting ready to walk out of this meeting. So it really had no significance at all.

Senator THURMOND. So you both say this article is untrue?

Mr. MORGAN. Senator, they even have the date of the meeting wrong. That is absolutely untrue.

Senator THURMOND. I know Senator Glenn is a fine man, but maybe he has been misled by this false article.

Senator, I do not know whether you are relying on this article for some of the positions you are taking or not. But at any rate, these gentlemen say it is absolutely untrue? This article is absolutely untrue.

Why in the world would a prominent newspaper, a daily newspaper, publish something that is absolutely false, calculated to mislead the public? Why did they do this?

Mr. MORGAN. I cannot answer that.

Senator THURMOND. We ought to call this to the attention of the paper, tell them what has been written there is false. It is untrue, it is misleading, it is unfair to the Department of Energy, it is unfair to Dr. Spencer and Mr. Morgan and the others connected with it.

Now, Mr. Morgan, how much of the ongoing research related to the Savannah River research will be useful or necessary in arriving at the technical judgments that must be made in looking at the reactor design of a new production reactor?

Mr. MORGAN. The activities are something on the order of $10 million a year, that will be helpful to have this information if it is decided to go with a heavy water production reactor in the future.

Senator THURMOND. Dr. Spencer, do you have any comment on that?

Dr. SPENCER. I would just elaborate that in the design of a new production reactor, heavy water reactor, design changes can be made to alleviate the particular problems that we have talked about here earlier today associated with the emergency cooling system. So there will be no question about that particular accident in a new production reactor.

NEED FOR NEW PRODUCTION REACTORS

Senator THURMOND. Mr. Kaspar, does the closure of the N-reactor necessitate the consideration of two new production reactors? If so, should their construction proceed in parallel or sequentially?

Mr. KASPAR. Let me answer that in a couple of ways. The N-reactor only had about 3 to 5 years worth of life left in it, due to life limiting parameters, specifically the growth of the graphite lattice. So the closure of the N-reactor 5 years early really would not have an impact on whether you needed one or two production reactors in the future.

Our budget this year has in it a provision to get started on one new production reactor, and we owe the Congress an assessment as to whether one or two is the right way to go. But the first one is included in this year's budget.

Senator THURMOND. Do you have any comment on that, Mr. Morgan or Dr. Spencer?

Mr. MORGAN. No, sir.

Dr. SPENCER. No.

Senator THURMOND. I believe my time is up, Mr. Chairman.

Senator EXON. Thank you, Senator Thurmond.

Senator Glenn.

Senator GLENN. Thank you, Mr. Chairman.

REACTOR ENERGY LEGISLATION

I was glad the chairman brought up my legislation and commented on it. Let me talk for just one minute about that bill. It has four titles in its original version. Title 1 sets up an advisory council to report to the Secretary of Energy and prioritize things that were really safety and health matters.

If the Secretary chose not to act on these priority recommendations or could not because of budgetary constraints, the recommendation would then go to the President. This is only for very impor-

tant items. These would not be just every nit-nat, such as whether you have an L pipe on something that should have been a straight run pipe or something like that.

Safety and health matters have to be prioritized. Only the most important would get tossed to the President and he would have to make a decision on whether production at that time was more important than that particular safety consideration. He could well decide production is more important, that is fine.

And I think that is a Presidential decision. I think that is where a decision like that should rest in a priority case.

That was the first title. Title 2 puts OSHA inspections in. Title 3 locks in what is being done now with regulation of mixed hazardous wastes. It gives EPA the control over hazardous wastes, DOE control over radioactive waste, and so on. And title 4 sets up the inter-agency group to review the health effects of ionizing radiation.

Now, Title 1 was the matter referred to this committee from Governmental Affairs after we had passed all four titles over there. We had five different Armed Services hearings on this, five hearings. And it was all on Title 1.

And then Title 1 passed this committee unanimously. Senator Thurmond voted for it, Senator Exon voted for it. All the members of the committee voted for Title 1 as modified by this committee.

I had stated publicly and do it again here this morning. I am happy to jettison parts 2, 3, and 4 and just pass on the Senate floor what we already have voted unanimously on, what the chairman voted on, what Senator Thurmond voted on, what I voted on, all the rest of the members of the committee, on that Title 1.

It would take Titles 2, 3 and 4, so I assume they will stick with their previous decisions on this. I would hope I have their support on that.

So I think what the chairman referred to was the whole bill as it came out of Governmental Affairs Committee. I think it is so important that we get this locked in. I hope we can do that, because this committee voted unanimously, and the Governmental Affairs Committee voted on that Title 1.

So that is what we are pushing right now.

Senator Thurmond, in response, I am not relying solely on the Washington Post. We have 21 different GAO studies here. That is what I primarily rely on here.

I was certainly interested in the Washington Post articles that have been running, because I thought it was highly unlikely that those quotes were as inaccurate as the witnesses today seem to indicate. That is up to them to work out with the reporter, I guess, as to what is accurate and what the people did or did not say.

A specific question. You say that one of the reactors down there has gone back up 3 percent. EG&G did their report in March just about a year ago now, March 30, 1987. In their conclusion they say: "In our opinion, the analysis that has been made to support the current operating power levels contains ad hoc procedures, lacks consistency and lacks detailed independent review.

While we believe that the current operating power levels contain adequate conservatisms, based on material presented by the Du Pont personnel we would not recommend any increase over the

current operating levels until a consistent analysis of the decay heat removal process is completed, documented and reviewed."

Was such a document completed, documented and reviewed before you raised your power levels?

Mr. MORGAN. Senator, may I respond to that? The limits that they are talking about are the no bulk boiling limits—NBB–0 we call them.

We are still utilizing that same limit system, and we have adjusted power within that limit system. We have not modified the limits, and we are not in conflict with that statement, sir.

Senator GLENN. Did you operate for some 7 years above what the cooling capacity would have been had you had a core——

Mr. MORGAN. That is subject to debate, and we will find that out when we finish all the experiments and all the calculations within the next approximately 2 years.

Then we can say we have proven that we can go back to 90 percent or 100 percent or whatever that number may be. Then we can say whether we were operating out of a safe limit.

We believe it was prudent to bring the reactor power down until these things were resolved.

Senator GLENN. You reduced it by 25 percent as a result of what had been determined. Then NAS, the National Academy of Sciences, came out with a letter that said they did not think that was enough, that you were not within safe limits yet. They suggested another 25 percent reduction, which you did.

Mr. MORGAN. Until we resolve these issues, they were concerned about bulk boiling in the fuel region during this hypothetical accident and that we not have any boiling in there. They were concerned when there was boiling could you restrict flow in adjacent tubes. Those were experiments that we have to verify.

Senator GLENN. My time is up. I would just say this. How we operate now is so important, because we do need this capacity. We need this production, particularly in the tritium area, as we are all aware, which has a half life of 12.5 years and is a necessary component of our bombs. Weapons have to have the tritium redone and refurbished every so many years. That is absolutely necessary.

We are using most of our old stockpile for fissile material now, but we do need the capacity. So I support that fully. That is one problem.

The second one, though, is the cleanup in all those plants all over the country. I will tell you, we have not yet begun to seriously look at that, and that is going to cost many tens of billions of dollars in my estimate. I will work with you in trying to get that money and get going on cleanup, even if we knew how to do all of it, which I am not sure we do.

Thank you, Mr. Chairman.

Senator EXON. Thank you very much, Senator Glenn.

TITLE 1

Since the matter of Title 1 has come up again, and I guess I brought it up to start with, I just would like to clarify from my standpoint as chairman of this subcommittee, and I think I speak for practically all the members of Armed Services, Title 1 as origi-

nally presented in your bill was not the one that we voted to support.

We do support and you have supported your revised Title 1. So I think we agree on that.

The battle that is going on right now that has never been fully understood in the press, I guess, is that we are having a considerable battle, as I think Senator Glenn would attest, with regard to jurisdiction.

Jurisdiction goes a long way down the road on this. We are all very much concerned about the national security interest of the United States and this very important material that has a great deal to do with the nuclear deterrent of the United States of America.

We want and are going to insist in the Armed Services Committee that that remain under the jurisdiction of the Armed Services Committee and not be delegated to any other committee. We are not so much concerned as to whether Senator Glenn would do that because he is one of us and a very valued member of our committee.

We are very much fearful that should this go to the House of Representatives, given the situation as it exists over there today, we could find ourselves in a position of the Armed Services Committee losing control over a critically important part of our nuclear deterrent.

So that is what the battle is all about today. I agree completely with Senator Glenn that we subscribe to Title 1 as it has presently been formulated. The fight goes on with regard to jurisdiction.

Mr. Kaspar, what are the national security implications of power reduction of the L reactor? What does this reduction mean in light of other reductions over the last year and a half?

Mr. KASPAR. To go into any detail, we would have to go into closed session.

Let me say, however, that there are contingency plans, particularly around scrap recovery and things that can be done to provide sources of plutonium. At this point, this most recent power reduction, while unfortunate from a production standpoint, is not prohibitive.

DU PONT AND SAVANNAH RIVER PLANT

Senator EXON. Let me ask this question. Dr. Spencer, Du Pont recently announced a decision not to continue to operate the Savannah River Plant for DOE. Can you tell us why it is that Du Pont decided not to continue working at the Savannah River and whether you think the company's experience can be adequately replaced by another contractor.

Dr. SPENCER. In a letter to all the employees at the site, Dick Heckert, the chairman of the board, identified three primary reasons why Du Pont made the decision. The first one was that when the Federal Government came to Du Pont in 1950 and asked them to design, construct and operate the site, Du Pont really was in a very unique position because of its experience doing the same type of thing at the Hanford site in the Manhattan project in the Second World War.

They felt a strong responsibility when the President requested them to do that, so they did.

I think the view is now that there are a number of companies in the nuclear business who have strong capability and that a new firm or a collection of several companies together can provide strong and competent leadership to the site activities in the future.

The second item was associated with the liability coverage and the Price-Anderson Act and concern about the implementation of that act and possible modifications to it.

As you know, Du Pont has made no profit from the operation of this facility during its 35 years of operation, and it is inappropriate that a corporation place stockholders' assets in a business operation where they make no profit at all.

The third one was one that I guess is typified by some of the discussions this morning. That is the somewhat contentious environment that we have gotten into and the large amount of time that is required by the upper Du Pont corporate management to deal with these particular issues again, in an activity that is not for profit.

So I think those were the three items that were identified by Mr. Heckert.

I think the other point that you were asking about, in terms of continued operation of the site, we are now going through the process to get a new contractor. We had a meeting several weeks ago. Some 92 companies came to express interest in the contract.

Those of us who hope to be at the site in the future believe that we will have a competent team that will be brought in. There will only be a relatively small number of Du Pont managers that will no longer be associated with it.

So the history and tradition and safety that has been so important to our operation will continue in the future and be a cornerstone of our operation in the future.

Senator EXON. Thank you, Doctor.

My last question is to all three of you, I guess, and I think it is not going to take lengthy replies.

NATIONAL SECURITY

From a national security standpoint, is it not true that the tritium plants K and P are even more vital than the L plutonium facility at Savannah River?

Mr. Morgan, we will start with you.

Mr. MORGAN. The reactors that we have there can operate either on a tritium charge or a plutonium charge. When we restarted the L reactor, we considered we had three other reactors in operation at that time, and so we only considered L in our environmental impact statement to produce plutonium.

Now we nominally need one reactor on tritium at any given time. With the reactors at half power, we have to have tritium in P and K at this time to meet those requirements.

But, yes, if we were to have problems with either one of those reactors, it would be extremely critical.

Senator EXON. Mr. Kaspar.

Mr. KASPAR. I guess the only thing I would add to that is that in the event that there was a problem with tritium supply, L could be

a contingency option. We would have to go through the NEPA process in order to make that happen. L does represent the contingency for tritium, so I guess I would not separate them in terms of need to the Nation for national security. They are all three very important.

Senator EXON. Dr. Spencer.

Dr. SPENCER. I have no additional comments.

Senator EXON. Thank you very much. My time is up.

Senator Thurmond.

Senator THURMOND. Thank you.

NEW PRODUCTION REACTOR

Mr. Kaspar, with the recent announcement about closing the N reactor, has the Department reconsidered the pace at which it must move forward on the new production reactor?

Mr. KASPAR. No. The schedule for the new production reactor is that we need that reactor as quickly as we can reasonably and safely and legally get it on line to do the job that needs to be done.

Again, N reactor had only a couple more years, 3 to 5 more years, to run anyway and really does not impact the new production reactor issue in that sense.

Senator THURMOND. How long have you been at the Savannah River plant now?

Mr. KASPAR. I will report down there April 1.

Senator THURMOND. In other words, you are starting on April 1?

Mr. KASPAR. Yes.

Senator THURMOND. Mr. Morgan, how long have you been there?

Mr. MORGAN. 15 years, Senator.

Senator THURMOND. Dr. Spencer, how long have you been there?

Dr. SPENCER. Almost 21 years.

Senator THURMOND. Are you satisfied to live in the area? Do you feel safe? Do you feel the Department of Energy has done what it should and the Du Pont company has done what it should to operate this plant in a safe and equitable manner for our Government?

Dr. SPENCER. I feel completely safe to live there. My children have been raised there and are now in college, and I hope to continue to live there for many years in the future.

We have done a great deal of work. I think, as has already been addressed here, there is a great deal yet to do in terms of the environmental cleanup. In dealing with those particular issues, we have initiatives in the safety area. Those are continuing to be supported and will be supported in the future.

I can characterize it as an outstanding safety record. We have a lot of work to continue to do to support that and maintain it in the future, and we are committed to do that.

Senator THURMOND. I know the feelings about this plant, of the people in South Carolina who live in that area and I have talked to so many who live in Georgia and work there. There are about 20,000 people, I guess, that work there in all, and they have had no concern about the operation from a safety standpoint. They have had full confidence in the Department of Energy, had full confidence in Du Pont, and they feel an excellent job has been done.

Years ago when the plant first started, the EPA was not so prominent and not so involved as in recent years. As time has gone by, EPA has become more active, and we have no objection to the EPA being active. We think it is right.

But as a whole, I think the people in Georgia and South Carolina are well pleased with the progress that has been made with the operation of the plant.

I have been back there. I have had a home in Aiken since 1951. My family has lived there since I have been in the Senate, since 1971 when my first child was born. I recently moved the whole family back to South Carolina and moved right to this very area. I have a home within 15 or 17 miles of this plant. If I had any concern about it being dangerous at all, I certainly would not have done that.

I feel perfectly safe with the way this plant has been operated and is being handled today, and I just wanted to commend you officials for what you have done and to let you know that the public, as I see it, and I personally, feel that you have done a good job. We are proud of the way it has been operated.

Mr. MORGAN. Thank you, Senator.

Senator EXON. Thank you, Senator Thurmond.

Senator Glenn.

Senator GLENN. I do not want to get into a debate with my distinguished colleague from South Carolina, but I would say there is concern in that region of the country.

This is from October. It is an editorial out of the Atlanta Constitution, and that basically quotes Under Secretary of Energy Salgado as saying that the record has been dismal. That is his word, not mine.

He told a Senate subcommittee recently, "Practices of the past have left an environmental legacy of enormous proportions." That is the Under Secretary of Energy testifying, not me.

The editorial goes on to give examples of what the cleanup should have been. Basically, one of the things they favor is the approach I have taken of making sure nothing is overlooked and that nothing is covered up in the way of safety as we seek to maintain the production capacity that I favor, too. I am mentioned in this article.

[The information referred to follows:]

[From the Atlanta Constitution, October 29, 1987]

MAKE SAVANNAH RIVER PLANT SAFER

The admission was startling only for its candor. How does the Energy Department regard its environmental and safety record at weapons factories? As "dismal" Joseph Salgado, an Energy undersecretary, told a Senate subcommittee recently. "Practices of the past have left an environmental legacy of enormous proportions."

Along the Savannah River, this nugget of truth will not exactly stop the presses. News from the Savannah River Plant near Augusta has been dismal for years. Run by the Energy Department, the plant produces plutonium and tritium for use in our nuclear arsenal. Its operations, while secret, are known to have been stunningly lax.

For example, many sites on its massive grounds have been contaminated by disposal of hazardous wastes. This would be trouble anywhere. But at the Savannah River Plant, its especially dangerous because the facility sits atop the Tuscaloosa Aquifer, which is the water supply for much of the Southeast.

What's more, as investigators have made clear, the reactors themselves are not as safe as they might be. Hairline cracks and leakage of radioactive water have been a

problem in one. The reliability of emergency cooling systems is a question in three. The reactors lack containment domes that would keep radioactivity out of the environment in the event of a catastrophic accident.

In a confessional mood these days, the Energy Department also concedes that an outside agency ought to monitor safety and environmental practices in all of its 18 plants around the country. Unfortunately, it balks at the most sensible idea yet offered, a plan by Sen. John Glenn (D-Ohio). Why? Well, the senator's proposal would give the outside monitors not just bark, but bite.

Under his bill, a Nuclear Safety Board would evaluate safety standards, investigate problems and recommend solutions. If the Energy Department ignored its advice, the board could appeal to the president. That is crucial. Indeed, the board should have the power to close an errant plant or to order—as in mandate—changes in procedures.

Salgado begs to differ. Such high-tech decisions should rest not with the president, he says, but with the secretary of energy and other nuclear experts. He is wrong.

Consider the situation at the Savannah River Plant. The Energy Department's No. 1 job there is to manufacture plutonium. As everyone agrees, safety has received short shrift. Even with an oversight board nipping at its heels, the department will be under pressure to produce plutonium first and see to safety second. But a board with appeal power could ensure that safety comes first.

Besides, a technical background isn't all that matters here. The techies, please recall, allowed the plant to contaminate the land above the aquifer. Forget about science. Any politician knows how catastrophic this might be—once the news gets out.

Senator GLENN. Let me say to the chairman, if I might, just so there can be no misinterpretation of this, the Title 1 that I was referring to is exactly the title he referred to. It's the one we worked out in this committee—the Armed Services Committee—as being satisfactory. That is the one I am talking about, and stripping the other titles off so we can go forward with a united front on this thing and get it through.

Senator EXON. If I might ask a question. Would you be agreeable to going forward on a united front under the auspices of the Armed Services Committee? That is the key question.

Senator GLENN. No, I do not think so.

Senator EXON. That is what I was afraid of.

Senator GLENN. I meant our jurisdiction should not hold up something as important as this, the health and safety of the workers.

Senator EXON. All I can say to you, Senator Glenn, since you obviously want to debate this, I suspect that we are going to be very firm in our conviction that you and I have discussed on many occasions with regard to jurisdiction in this matter. If we have to have a floor fight on the Senate floor, so be it.

Senator GLENN. I hope we do not come to that, because this is so important I would hate to have a little jurisdictional squabble between committees here get in the way.

The Governmental Affairs Committee has oversight over the efficient use of Government and the organizational aspects of Government, and that is the reason why it fits in our committee. We run into this all the time on that committee. There are other committees that also have an interest in what we are doing in this oversight function and in the organizational aspects of Government.

We work with those committees as we did in this case, and then we go forward with the legislation. That is a normal procedure and is not something that is unusual. We are not trying to usurp anyone's jurisdiction.

We have primary jurisdiction in oversight and efficiencies that allow us into any area of Government, that is the way the committee is set up. That is the reason we got into this issue and that is the only reason we got into it there. We worked out our difference with this committee, and I would hope we could be united in going forward.

Let me ask a question here. You have your P and K reactors down there now concentrating on tritium. That could be one of the most important things we have.

With the production goals that we have for tritium now, does one of those back up for the other, or do we need both of them on line all the time to produce the tritium that we need for weapons refurbishing?

Mr. KASPAR. My concern is getting into classified turf. The answer is we will need P and K on tritium for the foreseeable future.

Senator GLENN. Both of them?

Mr. KASPAR. Yes.

Senator GLENN. I have been very concerned about that because right now, as I said a little while ago, we have a pretty good source of tritium coming out of our old weapons. With the reduction in numbers of new weapons, our requirements for thistle material in itself is not as great perhaps right now as it has been in years past. That does not mean we do not want that capability if we need it. We do have to have that capability if we need it, and I want to make sure we have that.

The very critical one is tritium. We cannot do without it for any substantial period of time, because it has a half life of about 12.5 years. So we need a good supply of that on a continuing basis.

Mr. Kaspar, Dr. Ahearne is the chairman of this new Advisory Committee on Nuclear Safety; right?

Mr. KASPAR. Yes, sir.

Senator GLENN. Was he informed of the problem before a decision was made to reduce power at the L reactor?

Mr. KASPAR. I do not believe so. Again, our commitment has been, as Mr. Morgan stated, that both the production people, the lab people and the Department oversight people all have to be saying go ahead to keep power levels up. Any one of them backing off——

Senator GLENN. Why was he not informed? If he is going to be the man to oversee all this and is really going to be listened to, why was he not even informed there was a problem and not informed of the solution?

Mr. KASPAR. To be honest, I would have to confirm that he was not informed. I certainly did not do that.

Senator GLENN. Can you provide that for the committee?

Mr. KASPAR. Yes, sir.

[The information follows:]

Although Dr. Ahearne was appointed as Chairman to the Advisory Committee on Nuclear Facility Safety on February 19, 1988, the committee was not officially formed at the time of this hearing or when the power was reduced in L Reactor at the Savannah River Plant. The committee was officially formed on March 1, 1988, and the power was reduced in L Reactor on February 12, 1988. Therefore, notification to Dr. Ahearne or the Committee on Nuclear Facility Safety of a change in the L Reactor power level was not possible.

In addition, the reduction in power to L Reactor was not a change to the basic methodology used to calculate the operating limits. Rather it was a change in the method of implementing the limits (calculated using the same basic methodology) to ensure the most conservative and, therefore, the safest operating limits. This decision was agreed upon by the appropriate personnel at the Savannah River Operations Office, the operating contractor, and the Department of Energy, Headquarters. This decision would be outside the scope and purpose of the Committee on Nuclear Facility Safety which is to provide independent, outside advice and recommendations on items of major safety significance.

Senator GLENN. I think that indicates once again what status the Advisory Committee is going to have at DOE. If he was not informed or you, as one of the responsible officials, cannot tell me that he was informed and that his opinion was sought positively, I think that indicates where we are going right now.

Mr. MORGAN. Senator, may I comment? I believe that it is my personal obligation if I think there is a problem, to take immediate action. I am going to either put a reactor down in power or, if I think there is a safety issue, I am going to shut the facility down, and I will inform people afterwards.

But I feel very strongly that I do not have to get permission to back off or shut something down. Will I have oversight and people looking at my facilities? Absolutely, but I think to put a requirement that an operating official has to get permission to remove something from operation because it is unsafe is an untenable position.

Senator GLENN. I agree with you 100 percent. I would not quarrel with you at all there. But this was not a runaway condition where you had to make a momentary decision down there or a decision within hours. It is something that was built up, it was known, and I would think that the person who is going to be in charge of the safety committee should be consulted as to whether he thought that the reduction was enough or whatever. It is going to be his responsibility to make recommendations.

I do not question, Mr. Morgan, at all your ability to take whatever safety actions you think necessary in reducing power. I agree with that. But I also think where there was time to notify the person who is going to be charged with safety responsibility, his advice and counsel should be sought.

Mr. MORGAN. I had a discussion with his executive director last Monday when I was in town, sir, not directly with Dr. Ahearne.

Senator GLENN. My time is up. I do have more questions, Mr. Chairman.

Senator EXON. Thank you, Senator Glenn.

I think, gentlemen, I do not know what your time restraints are. I think we are winding down pretty rapidly now.

I am pleased to call on Senator Quayle.

Senator QUAYLE. Thank you, Mr. Chairman.

I will not take too much time.

First, I want to thank you for having these hearings. I think it is a subject matter that is very important, and I will be quite honest with you, I have not spent as much time on this critical subject matter as I should. About the only way that you are going to get those of us that have not looked into this issue as much as we should is to take us through these drills. So I, for one, am appreciative of your having these hearings because I think we do, whether

it is Savannah River or Hanford reactor or whatever issue on the whole production facilities, it is absolutely essential that we have an understanding very briefly.

I am aware of this article that was in the Washington Post, and I have quickly read, Mr. Kaspar, your statement.

REACTOR SHORT AND LONG TERM PROBLEMS

Could you just describe for the committee very succinctly what the problems that we have got in the short term from an operation and production point of view, and also some in the long term, just specifically from your viewpoint?

You say, committee, here is what you had better be examining, here are some of the short term challenges we have got, and here are some of the things in the longer term that we have got to be concerned with.

Mr. KASPAR. The ability to do the calculations and the analysis that support a conclusive understanding of what is going on inside the reactor, even under severe accident conditions, hypothetical conditions, is not as mature as it should be when compared with what is available on the commercial side, and that is one of the issues that was raised in the National Academy of Sciences report and why power limitations were placed on those reactors. A more conservative approach had to be taken until that calculational basis can be brought up to a level of maturity that is required.

Senator QUAYLE. Why is that the case?

Mr. KASPAR. Why is that the case?

Senator QUAYLE. That we do not have the capacity and capability to do that that they do on the commercial side?

Mr. KASPAR. It is something that should have been done some years ago and has recently been started, and the power levels in the reactors will not return to full power operation until this is done and it is better understood.

Senator QUAYLE. How long will that take, and do we have it under control?

Mr. KASPAR. The situation is under control in that a very conservative operating basis had to be assumed at the cost of production to assure a safe operation. The plan is to develop that understanding. There is no plan to increase power levels substantially for the next 18 to 24 months while that analysis is going on.

Sometime a couple of years from now we will revisit the notion of returning to something approaching full power, but only after it has been through a thorough safety review process to make sure we know what we are talking about.

IMPLICATIONS ON NATIONAL SECURITY

Senator QUAYLE. What implications does this have for national security?

Mr. KASPAR. Our national security needs are being met within our current plans. Certainly another issue the National Academy of Sciences brought up was that our reactors are older, quite old, as a matter of fact, and that there are end of life criteria that must be met. The clearest example of that was the N reactor situation where the graphite growth, swelling in the graphite would have

limited the N reactor operations to another 3 to 5 years. There have been no specific life-limiting criteria identified for the Savannah River reactors, given that they are low temperature, low pressure, fairly simple machines.

However, that is not to say that there will not be a life limiting factor identified sometime in the future which, again, supports the notion of getting on with building a new production reactor to satisfy our tritium needs.

Senator QUAYLE. So a requirement that has to be fulfilled is the actual construction and building of this new reactor?

Mr. KASPAR. Certainly, unless you want to postulate no nuclear deterrent. As long as there is a nuclear deterrent, we will need tritium to support that nuclear deterrent, and our reactors in this country are quite old, and it is time, if not past time, to get on with building a new production reactor.

Senator QUAYLE. My time is up.

At what time down the road do we run into this problem of production capability and in your judgment begin to impair the posture this country has?

LIFE-LIMITING CRITERIA FOR SAVANNAH RIVER REACTORS

Mr. KASPAR. Again, there have been no life-limiting criteria identified for the Savannah River reactors. There is nothing that says on a certain date we will have to shut those reactors down.

We are increasing our vigilance to make sure that we are keeping a careful eye on them to see if there is anything there that is not quite right. But I cannot say on this date those reactors are going to be obsolete.

However, they are old, and it is time to make sure that we have a modern facility to support the nuclear deterrent.

Senator QUAYLE. If they are shut down, then where are we as far as national security?

Mr. KASPAR. If they were shut down for any period of time, the deterrent goes away.

Senator GLENN. Are you talking about P and K? Is that what you are talking about?

Mr. KASPAR. If all of the reactors at Savannah River were shut down, we could not support the nuclear stockpile.

Senator QUAYLE. Is that a possibility that in the next decade that may happen for safety, that we have the technology just becoming so old?

Mr. KASPAR. Again, we have not identified anything in the next 10 years that is going to necessitate shutting the reactor down, but they are old, and it is a concern.

Senator QUAYLE. So you think we are all right for the next 10 years?

Mr. KASPAR. I did not say that. I said we have to, within the limits of safe operation, we have to depend on those reactors until we get a new production reactor on line. There could be some contingency plans about small, interim contingencies to get you over a lapse of a couple of years, but by and large, a tritium supply is necessary to support the deterrent.

Senator QUAYLE. Thank you, Mr. Chairman.

TRITIUM PRODUCTION

Senator GLENN [presiding]. To follow up on Senator Quayle's question a little bit there, we talked about the tritium production a little bit earlier, but are there any other reactors in the whole complex, DOE complex, anywhere in the country that are capable of being adapted in a reasonable time to tritium production, if we had to have it?

Mr. KASPAR. Theoretically, yes. I mean, you could posture the physics that says that you can do that. N reactor is a theoretical contingency for tritium, but it is not a very efficient producer of tritium, and with the life limiting aspects of N reactor, you probably would not get that much out of the reactor anyway.

Joe, you may be able to give a more indepth answer to that.

Dr. SPENCER. I think the difficulty is that most of the other DOE reactors that exist are relatively small in power. Therefore, their production capability is small when you compare them with the large production reactors. So it is a matter of the magnitude of production.

Senator GLENN. I do not want to get into a classified area because we would have to close the hearing, but it was my understanding that that P and K are the ones that are the main tritium producers, and we would be hard pressed if they went down.

Mr. Morgan, say your decision had been in the other direction, to go up in power, would you have notified Dr. Ahearne and the other people?

Mr. MORGAN. The P and K reactors did increase in power very slightly, one on the 5th and one on the 12th because operating within the no bulk boiling limits we were able to put real time temperature into the control computer. And so we were just getting closer to where we had agreed to operate.

But to answer you, if there is a change in the limit setting process, we could not do that without Dr. Ahearne's approval.

I could not change the process on how I set the limits on those reactors to go higher without getting that approval.

Senator GLENN. Mr. Kaspar, do you not think that if that advisory board is going to perform the way it should, the board and the chairman should be notified and consulted on such matters in advance, not have to read it in the newspapers as happened in Savannah River?

Mr. KASPAR. Absolutely, and once we get this board up and running, that is exactly what we are going to have to do.

The reason I am hesitating is that the board, I am not sure on February 12 whether it was actually in existence when there was a Federal Register notice that was about to go out, and so the processes really had not matured at that point.

Senator GLENN. I agree with you on that, and I am not trying to read things into this that we should not read into it.

Dr. Ahearne I believe had been appointed. He had been appointed a month ago or 2 or 3 weeks ahead of that, whatever that was. I note, though, that after the February 22 article, DOE appointed the other members of the board on February 24. Now, I do not know whether that was coincidence or whether or not DOE was responding to press reports and doing something that was a bit cosmetic,

perhaps. We have seen that in the past when we had some of these things come up. We have had a lot of great promises on when we are going to get cost estimates and all sorts of things through the years as a result of publicity. Then it dies down immediately thereafter.

I hope that that was the planned-for release date on the new members and it was not occasioned just by the February 22 newspaper article.

Mr. KASPAR. We have been working for some time to come up with that board, to make sure that we had competent people who had time to devote to the Department's needs, and it just recently came together.

Senator GLENN. Dr. Ahearne was apparently not notified, or at least there was not an issue made of him being in the loop and being a positive factor in making some of these decisions.

Let me ask further about who was consulted.

You have an Environmental Safety and Health Division. Were they represented at these meetings between Mr. Morgan and Du Pont when the changes were going to be made?

Mr. MORGAN. They were not in the meeting, sir.

Senator GLENN. They were not in the meeting.

ENVIRONMENT, SAFETY, AND HEALTH

Mr. MORGAN. I have a line responsibility and I have safety people on my staff responsible to me through an Assistant Manager for Environment, Safety and Health. They were represented in the meeting along with my operating people.

Senator GLENN. But they are your people, they are not out of DOE headquarters?

Mr. MORGAN. That is correct.

Mr. KASPAR. It turns out, however, Senator, that as a part of the overall review of the Savannah River program, there were representatives from the environment and health organization from headquarters that happened to be at Savannah River during this same time frame, reviewing the methodology of how you translate this no bulk boiling criterion into power levels and maintaining vigilance over that whole process of setting power levels, and they were alerted and were aware of the potential for the change.

Senator GLENN. They just happened to be there, you said.

Are they in the loop on decisions like this? Are they supposed to be?

Mr. KASPAR. They were certainly informed.

Senator GLENN. Just because they happened to be there?

Mr. KASPAR. No, no, immediately after the meeting the phone calls started.

Senator GLENN. They were not consulted before as to what was going to be done?

Mr. KASPAR. Not in reducing power levels. If we wanted to take power levels up, they certainly would be in the approval loop.

Senator GLENN. I agree if you are reducing power levels, you are not reducing them just because you do not need more production, you are reducing them because some safety matter has been called into question. I would think that if ES&H means anything at all,

that they would be notified immediately that there was a problem and that they would have an input as to whether whatever action was going to be taken was adequate from their standpoint, is that not right?

Mr. KASPAR. They were. And as soon as the decision was made, and they were aware that this decision——

Senator GLENN. Were they brought in as part of the decision process? Was their opinion sought as to whether they felt what was going to be done was adequate?

Mr. KASPAR. Yes.

Senator GLENN. How did they know that when they were not notified until after the decision?

Mr. KASPAR. They had an opportunity to reopen the decision and say should further reductions be taken.

Senator GLENN. But your decision is made at that point. Once again, your Environment, Safety, and Health people have taken second place, and Dr. Ahearne was never even notified.

Dr. SPENCER. I believe there is a little timing confusion.

I think you mentioned that by Tuesday of that week there was a meeting going on at which the ES&H people were there, and as part of that meeting they were informed and were on a review process with us already. We meet with them every month to 6 weeks. They were informed of the impending recommendation, and they reviewed it and said that seemed reasonable to them. And then we went through the rest of the week to make the decision process.

Senator GLENN. Well, ES&H—I think that we have had testimony, if not, it has been in private conversation with some of the people over there that ES&H has had difficulty getting information from field operations managers.

Now, if they are in charge of environment, safety, and health, I would think that in something where we have a problem with a given reactor and reducing power, I would think they would have to be notified in advance if they are to mean anything at all in the whole process. They would have to know that and have their input taken into consideration, would that not be logical?

Mr. KASPAR. Let me respond in two ways. I would expect to see ES&H people from headquarters at Savannah River in the next couple of weeks to address that communications problem. But moreover, one of the functions of those ES&H people is to make sure that the line managers, specifically, in this case, Mr. Morgan, are taking their safety responsibilities seriously, and I think in this case there was a general comfort that Mr. Morgan was taking those safety responsibilities seriously.

Senator GLENN. If I was in ES&H at DOE, and we are getting into lots of initials here. I think everyone in the room is probably familiar with all of these things, but if I was Environment, Safety, and Health over at DOE, and if DOE had a big enough problem so that it was going to reduce power to be more safe, I would want to know about it, and I would want to be in the loop that made that decision.

I agree 100 percent with Mr. Morgan who says if he has got a problem and he wants to reduce power, he is going to reduce. But where there is something that is not an imminent failure or some-

thing that has to be done in 5 hours or less, where we have a long-standing problem, then it would seem to me that you should bring in all the experts you can on that decision process, and that would include the ES&H people. It seems to me it would include Dr. Ahearne.

Now, he was in sort of a never never land here, not having his committee with him. He has had a lot of experience in the nuclear field, and I would think that in being the head of the new Safety Advisory Committee——

Mr. MORGAN. Senator, may I respond to that?

Again, we are talking about a meeting that took place at 5 to 5:30 on Friday evening. People left that meeting and initiated some phone calls. Some people were available, some were not. And I will tell you that I would today, if today were Friday and it were 5:30, I would take the same action, and I would notify the system of what I have done so that they could review it. And I do expect review on oversight that is adequate, and I think that should be done.

But in the line responsibility, I cannot rule that by committee. I have to take immediate action on those things that I think prudent, and I think I could be criticized if I did not, if I had not taken power down that Friday night.

Senator GLENN. I do not disagree with you at all on that.

Mr. MORGAN. There is no question about informing people and having the appropriate oversight. We expect that, and we expect to see all of our actions reviewed to see whether they are adequate, and if they were not adequate, to take further action.

Senator GLENN. I would support your ability to do that, but in a case like this, it seems to me that it would not have hurt to also track down Mr. Ahearne that night. I am sure he is available someplace by telephone and let him know and let the ES&H people know directly as to what is contemplated to be done, and see if they had any suggestions or any concerns about whether this was going to be adequate.

Well, we appreciate your patience here. It is almost noon. We have been going for some time. I guess I have wound up as the sole survivor here.

Does staff have any questions, since we have all these brillant staff folks around here dreaming up questions? Does anybody have any additional questions they want to ask?

Gentlemen, thank you very much. I got a little impassioned a little earlier because I feel this very deeply. I have been examining this matter too many years and quite frankly been stonewalled too many times, and I am tired of it. We finally have a commitment that we are going to have a budget suggestion in July of this year, and we are relying on that statement. It is 3 years to get to that. We give plenty of time, which is like 8 to 9 months from when that promise was made last fall, and we are relying on DOE's commitment. I am not doing this out of spite to DOE. Quite the opposite, I am a supporter of DOE, and I just want to get this estimate made of what it is going to cost not only to keep our plants safe now, but to make them more safe than they have been because they have not come up to the regular NRC standards. All you have to do is go through one of the plants to see that.

But it is not only that. We need to keep our production capacity. We need the deterrence, as you mentioned a while ago. I support that fully. Particularly critical is the tritium area. That is really vital. But we need to get on with the big cleanup that has been neglected for basically 30 years.

We had production goals. They were important. And we just did not give the attention necessary to safety concerns that went along with the production program.

And there is another factor here, too, and that is we have learned a lot more over the past 30 years about what the problems are. We did not even know wells were being contaminated. We did not have any idea of this until we started to make some measurements, some of which we did not even know how to make 30 years ago. And now we have a monstrous problem on our hands. We have offsite contamination, we have streams contaminated, we have wells offsite, and I do not know that we even have technology that can clean these things up.

But I know we have to make every attempt we possibly can. I do know that we ignored a lot of things. I mentioned at Fernald, 300,000 pounds of uranium oxides came down on that community out there over the past years. That is an enormous amount, and some of the rips in some of the plastic liners for those open pits we have out there for some of the wastes, some of those have let materials get down into the aquifer levels.

I do not know how you clean up an aquifer. That is a tough one. I do not know that anybody knows how to do that.

So we want to have our production capability. I agree with that 100 percent. I have supported every vote on that since I have been here, but we also want to start stressing the safety and health that we have ignored to a large extent for too long.

So I pledge I will work with you on that. I just want to get this thing going, and that is the reason I have submitted the legislation I have, because too often in the past, all we have seen is the little fig leaf trying to cover up whatever, and I hope that is not the case with Mr. Ahearne here and the appointment of this committee that was suddenly announced 2 days after the Washington Post article came out. So I hope we are not just dealing in coverups again here.

We do not want more coverups. We want to get this whole thing fixed. It is going to cost a lot of money, and as I said before, I feel like Paul Revere. You know, the costs are coming, the money is coming, because that is what it is going to be when we start cleaning up these plants and assuring an adequate production capacity, which we absolutely need. We are not talking about the $1 billion I think you talked about earlier for cleanup. We are talking about many, many, many times that, or else we are not even beginning to address the problem.

So you people are the experts, and we look forward to working with you. I do not want to work against you; I want to work with you, but we need more cooperation than we have been getting over the past few years.

The hearing will stand in recess subject to the call of the Chair.

Thank you.

[Whereupon, at 12 noon, the subcommittee recessed subject to the call of the Chair.]

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